Appendix E

Geotechnical Study

GeoPentech

July 25, 2017
Project No. 17064A

Mr. Will Cipes
Carmel Partners
530 Wilshire Boulevard, Suite 203
Santa Monica, California 90401

SUBJECT: GEOTECHNICAL REVIEW
PROPOSED DEVELOPMENT AT
223 - 241 N. JACKSON ST. (JACKSON STREET APARTMENTS)
GLENDALE, CALIFORNIA

Dear Mr. Cipes:

GeoPentech, Inc. (GeoPentech) is pleased to submit to Carmel Partners (Carmel) the results of our geotechnical review of the property located at 223 - 241 N. Jackson St. in Glendale, California. The location of the site is shown on Figure 1. This letter report is prepared in accordance with GeoPentech's proposal dated June 7, 2017 and your authorization dated July 5, 2017. We previously submitted a draft report dated July 14, 2017. This report has been revised to include laboratory test results which were in progress at the time of submitting the draft report. No changes were made to our findings and the key geotechnical considerations except the section on corrosion potential of soils was updated to reflect results of the corrosion testing.

The purpose of this geotechnical review is to assist Carmel with the due diligence process in connection with acquisition of the property for development of a residential apartment complex. The following sections present our understanding of the project, scope of work, and summary of our findings.

PROJECT UNDERSTANDING

Our understanding of the project is based on the exchange of emails on June 5 and 6, 2017. We have also been provided with an aerial map of the site and a conceptual site plan prepared by Architects Orange (AO) dated June 2, 2017, as well as a Phase I Environmental Site Assessment report dated July 10, 2015 and a Geophysical Survey and Limited Soil Assessment report dated August 7, 2015.

As shown on Figure 2a, the site is bounded by E. California Avenue to the north, E. Wilson Avenue to the south, N. Jackson Street to the east and N. Kenwood Street to the west. As also shown on Figure 2a, the project site is currently occupied by several Glendale Unified School District buildings. Two single story classrooms, a two-story apartment complex, and an asphalt paved parking lot are located near the intersection of E. California Avenue and N. Jackson Street, in the northern portion of the site. To the south of this area are Buildings A and B, bounded to east by N. Jackson Street and to the west by the Allen F. Daily High School. The remainder of the project site to the south of Buildings A and B consist of an asphalt paved parking lot. The northeast corner of the project site has

a surface elevation of approximately 575 feet Mean Sea Level (MSL) and the southwest corner has an approximate elevation of 563 feet MSL.

Based on the Conceptual Site Plan shown on Figure 2b, we understand that a 265-unit apartment complex, consisting of 5-levels of Type III construction above ground, and a Type I, 5-level parking structure with one partial subterranean level is currently being considered. Furthermore, we understand that the purpose of the geotechnical services is to assist Carmel Partners with conducting due diligence for the site.

SCOPE OF WORK

GeoPentech's scope of work for the geotechnical review consisted of the following:

- Review of available previously completed reports by Andersen Environmental for the subject project site; the Phase I Environmental Site Assessment report, dated July 10, 2015; the Geophysical Survey and Limited Soil Assessment report, dated August 7, 2015; and the published geological, geotechnical, and seismic information.
- Field Exploration Program – drilling three (3) hollow-stem-auger borings to depths ranging between 32 and 51½ feet, at the approximate locations shown on Figure 2a, to investigate the stratigraphy of the subsurface soils, and obtain intact and bulk samples for observation and laboratory testing.
- Laboratory testing of soil samples obtained during the field exploration program for determination of static physical soil properties including evaluation of the corrosion potential.
- Evaluation of the site subsurface conditions, geologic setting and identification of general seismic conditions and geologic-seismic hazards affecting the site and their possible impact on the proposed development.
- Engineering evaluation of the geotechnical data to support our findings and review.
- Preparation of this letter report.

FIELD EXPLORATION AND LABORATORY TESTING

Field explorations consisted of advancing three borings to depths varying between 32 and 51½ feet below the existing ground surface. The approximate locations of the borings are indicated on Figure 2a. The borings were drilled using 8-inch diameter hollow stem auger drilling equipment. During drilling, soil samples were obtained at approximate intervals ranging between 2.5 and 5-foot using either a Standard Penetration Test (SPT) sampler or a Modified California sampler. Bulk soil samples were also obtained at certain depths in all three boreholes. The work was performed under the supervision of a geologist who monitored the drilling operations and prepared a field record of soils observed and drilling conditions. The drilling was subcontracted to Martini Drilling, who provided all drilling equipment, crew, and supplies. Details of the explorations and the logs of the borings are presented in Appendix A.

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to evaluate the pertinent engineering properties of the soils. The

following tests were performed at the laboratory facilities of AP Engineering & Testing, Inc. in Pomona, California:

- Moisture content and dry density
- Sieve analysis and passing No. 200 sieve
- Direct shear
- Compaction
- R-value
- Corrosion

The tests were performed in general accordance with applicable procedures of the American Society for Testing and Materials (ASTM) and the State of California Department of Transportation, Standard Test Methods (DOT CA). The in-place dry density and moisture content values as well as the percentage of fines (material passing the No. 200 sieve) of the samples tested are presented in the boring logs, Appendix A. The complete results of laboratory tests along with the July 24, 2017 letter of AP Engineering are presented in Appendix C. GeoPentech reviewed the results of the laboratory testing performed at AP Engineering and accepts their use in this report.

SUMMARY OF FINDINGS

1.0 SUBSURFACE CONDITIONS

A geologic map of the site area by the California Geologic Survey (2012) is shown on Figure 3a, and the corresponding legend with the geologic unit descriptions is shown on Figure 3b. As shown on Figure 3a, the site is underlain by Quaternary-aged old alluvial fan sediments. Based on our current investigation, the alluvium is locally covered by artificial fill. A generalized geologic cross-section through the site is shown on Figure 4. The location of this geologic cross-section is shown on Figure 2a.

The Phase I Site Assessment report (Andersen Environmental, 2015) indicates that the site is not currently located within an oil field as determined by the State of California, Department of Conservation, Division of Oil, Gas, & Geothermal Resources (DOGGR).

Andersen Environmental performed an investigation to identify locations of current or former buried structures based on information obtained during their Phase I Environmental Site Assessment indicating the possible presence of a 550-gallon underground storage tank (UST) in the immediate area south of Building B (Andersen Environmental, 2015). Their investigation included two (2) hand auger borings and a geophysical survey utilizing electromagnetic induction (EM), magnetometry, ground-penetrating radar (GPR), and utility location equipment; the locations of the hand auger borings and survey area are shown on Figure 2a. The geophysical survey identified two GPR anomalies, which are likely areas of disturbed soils and possible former locations of USTs, and one EM anomaly, which may be an existing UST. These anomalies are presented in Appendix B and their locations identified in Figure 5. The presence of a buried structure at the location of the EM anomaly was confirmed by the hand auger borings, which were performed within the boundaries of the EM anomaly and which encountered refusal around 2.5 to 3 feet below ground surface (bgs). The contents of the potential current/former

USTs are not known, although analysis of soil samples taken at 15 feet bgs from the three borings near the anomalies did not detect the presence of petroleum hydrocarbons.

Prior boring logs and geophysical data prepared by Andersen Environmental are presented in Appendix B. Approximate locations of the prior borings are shown on Figures 2a and 5.

The following subsections describe the subsurface soil and groundwater conditions at the site.

1.1 Artificial Fill

Artificial fill was encountered within borings B-1, B-2 and B-3 to depths of approximately 3, 7, and 5 feet, respectively. The fill generally consisted of Silty Sand (SM) with gravel and occasional debris. Note that, as in other nearby sites in Glendale, deeper fill, including debris, may be present within other areas of the site.

1.2 Alluvium

Alluvial soils predominantly consisting of medium dense to very dense sands (SM, SP, and SW) with gravel and cobbles were encountered beneath the fill. A layer of loose material was encountered in borings B-2 and B-3 at a depth of about 12½ and 10 feet bgs, respectively. The SPT blow counts measured in the alluvium ranged from 8 to over 50 blows per foot. Borings B-2 and B-3 hit refusal within the alluvium at depths of approximately 32 and 38 feet, respectively.

1.3 Groundwater

Groundwater was not encountered during drilling of the borings to the maximum 51½ -foot depth explored. Based on a review of the Seismic Hazard Zone Report for the Los Angeles 7.5-Minute Quadrangle (CGS, 1998), the historically highest groundwater is anticipated to be at a depth of about 70-80 feet beneath the site.

2.0 GEOLOGIC CONDITIONS

2.1 Faults

The project site is located within a seismically active region of southern California. Recent examples of the seismic activity in the region include the 1987 Whittier earthquake and the 1994 Northridge earthquake. Figure 6 shows the site location relative to mapped active faults in the region, as identified by the USGS (2009). No known active faults cross the site, nor is the site located in a currently established Alquist-Priolo (AP) Special Studies Zone based on a review of the Burbank Quadrangle Zones of Required Investigation Map dated March 25, 1999. Significant faults near the site that displace the ground surface include the Verdugo fault (about 1 km northeast); the Raymond fault (about 3 km south); the Hollywood fault (about 4 km southwest); the Santa Monica fault (about 18 km southwest); and the Newport-Inglewood fault (about 19 km southwest). The San Andreas Fault is located approximately 45 km to the northeast.

Potentially active blind thrust faults are also believed to exist in the region. These blind thrust faults are not expressed at the surface, but are inferred to exist based on indirect information, such as seismicity and folded stratigraphy. Recognition of the existence of blind thrust faults in the region was largely triggered by the occurrence of the 1987 Whittier Narrows earthquake. As shown on Figure 6, the site is located on the hanging wall of the potentially active Elysian Park

and Puente Hills (LA) blind thrust faults. Based on the estimated depth of the fault plane, the closest distance from the site to the Elysian Park and Puente Hills (LA) fault planes beneath the site is approximately 6½ and 9 km, respectively.

2.2 Liquefaction Potential

According to the CGS Earthquake Zones of Required Investigation of the Burbank Quadrangle (1999), the site is not located within an area identified as having a potential for liquefaction. This classification is consistent with our site-specific observations, which indicate that the materials beneath the site are predominantly medium dense to very dense sands, and groundwater was not observed within the current borings to a maximum depth of 51½ feet bgs. Therefore, the potential for liquefaction and the associated ground deformation beneath the site is remote.

2.3 Seismically Induced Settlement

Seismically induced settlement is often caused when loose to medium-dense granular soils are densified during ground shaking. As indicated in subsection 1.2 above, a layer of loose sandy material was encountered in borings B-2 and B-3 at a depth of about 12½ and 10 feet bgs, respectively. Based on the proposed plans for development, the construction of the partial subterranean basement may remove some but not all of the loose material within the upper layers of the subsurface. As such, loose sandy soils that are not excavated as part of the future development may be susceptible to seismically-induced settlement.

2.4 Subsidence

Ground surface subsidence generally results from the extraction of fluids or gas from the subsurface that can result in the gradual lowering of the overlying ground surface. The site is not located within the limits of any active oil field. Furthermore, subsidence is monitored closely through the Global Positioning Satellite System (GPS), and based on the available information from California Department of Water Resources (2014) the project site is located within a vast region (extending from the San Fernando Valley to Long Beach) that shows a low to medium estimated potential for regional subsidence. Therefore, the potential for local subsidence in the immediate vicinity of the project site is considered remote.

2.5 Flooding

According to FEMA (2008), the site is not located within a defined floodplain or floodway boundary. The site has been assigned a FEMA Flood Zone X, which indicates “areas determined to be outside the 0.2% annual chance floodplain”. As such, flooding is not considered a hazard at the site.

2.6 Landslide

The site is located on relatively level terrain, and no landslides are mapped in the vicinity of the site (CGS, 1999). In addition, the site is not in a designated earthquake-induced landslide hazard zone (CDMG, 1999). Therefore, a potential for landslide is considered negligible.

2.7 Methane Buffer Zone

The site is not located near any active or abandoned oil wells, nor is it within close proximity to a landfill. Therefore, a potential for methane at the site is considered low.

KEY GEOTECHNICAL CONSIDERATIONS

Our review indicates that the site is feasible for the intended development from a geotechnical standpoint. The following sections are some of the key geotechnical considerations.

Ground Motion Parameters

The structures are anticipated to be designed utilizing current building codes. Based on the type of development, it is anticipated that the ground motion parameters will be based on code values.

Foundations

Based on the currently proposed conceptual plan, the structure will have a partial subterranean level as shown in Figure 2b. The bottom of the subterranean level will extend to depths varying from few feet below existing ground surface to about 15 feet below existing ground surface.

The field exploration indicated the presence of undocumented artificial fill up to a depth of approximately 7 feet and localized loose sandy material at a depth of about 10 to 13 feet bgs. In addition, removal of demolished foundation elements as well as potential presence of USTs should be anticipated. Based on this, excavations up to a depth of 13 feet to remove unsuitable materials will be required. To support the conceptual configuration of the proposed structure along with the subterranean level, shallow foundation system consisting of spread and continuous footings supported on either engineered backfill material or medium dense to dense natural sandy alluvium material below 13 feet depth can be used.

Excavation and Temporary Shoring

Earthwork operations at the site are anticipated to include excavations for the removal of demolished foundations, subterranean structures construction, removals of undocumented fill and existing inert debris, footing excavations, and trenching for utilities. Excavations are anticipated to be performed using conventional equipment.

Temporary excavations up to a height of 4 feet can be cut vertically. Where space is available, excavations can be made with slopes of 2:1 (horizontal:vertical). Where space is unavailable, cantilever soldier piles, braced or tied-back shoring can be used to support the sides of the excavations.

Based on the information gathered, excavations are not anticipated to encounter water. However, if localized areas of perched water are encountered, it can be removed by sumps and pumping.

Earthwork

Earthwork should be performed in accordance with the applicable sections of the grading code for the City of Glendale and the State of California, as well as the recommendations in this report.

Areas excavated to receive fill should be cleared and stripped of all debris, organic material and vegetation, and remnants resulting from demolition of existing foundations or structures. Cleared and grubbed material should be disposed of offsite.

The on-site excavated granular materials such as sands and silty sands can be used as engineered fill. Imported fill material, if needed, should be granular, non-corrosive, and free of organic matter or other deleterious material.

The bottom of the excavations should be proof-rolled so as to allow placement of any required fill. Fill should be placed and compacted to project specifications and observed and tested by the geotechnical engineer.

Corrosion Potential of Soils

Based on the results of the corrosion testing, the on-site soils may be classified as severely corrosive to ferrous metals, and the potential for sulfate attack on concrete is low. A corrosion consultant should be contacted to provide the appropriate measures against corrosion for metal piping.

GENERAL CONDITIONS

The information presented herein is provided as part of the geotechnical review associated with the due diligence process. This report is not for design or construction of the project. A detailed geotechnical investigation should be performed when the details of the development become available. Professional judgments presented in this letter report are based on an evaluation of the technical information gathered; our understanding of the proposed development; and our general experience in the field of geotechnical engineering. The findings presented in this letter report are based on the assumption that the subsurface conditions do not deviate appreciably from those disclosed by the field exploration. GeoPentech does not guarantee the performance of the project in any respect, only that the engineering work and judgment rendered meet the standard of care of the geotechnical profession at this time and for this vicinity of practice.

CLOSURE

Thank you for providing GeoPentech the opportunity to participate in this project. If you have any questions or require additional information, please call.

Very truly yours,

GeoPentech, Inc,

Sarkis Tatusian
Principal Geotechnical Engineer

Alek Harounian
Project Engineer

Attachments:
Figure 1 Site Location Map
Figure 2a Site Plan
Figure 2b Conceptual Site Plan
Figure 3a Regional Geology Map
Figure 3b Regional Geology Map Legend
Figure 4 Cross-Section A-A'
Figure 5 Geophysical Anomalies
Figure 6 Regional Fault Map

Appendix A – Field Exploration
Appendix B – Prior Field Explorations
Appendix C – Laboratory Testing

REFERENCES

ASTM International, West Conshohocken, PA, www.astm.org

California Department of Water Resources, 2014, "Summary of Recent, Historical, and Estimated Potential for Future Land Subsidence in California, Technical Memorandum."

California Division of Mines and Geology, 1998, Seismic Hazard Report for the Burbank 7.5-Minute Quadrangle, Los Angeles County, California: Open File Report 98-16.

California Division of Mines and Geology, 1998, Seismic Hazard Report for the Pasadena 7.5-Minute Quadrangle, Los Angeles County, California: Open File Report 98-14.

California Geologic Survey (CGS), 1999. Earthquake Zones of Required Investigation, Burbank, 7.6 Minute Quadrangle.

California Geologic Survey (CGS), 2012, compiled by Bedrossian, T.L., and Roffers, P.D., Geologic Compilations of Quaternary Surficial Deposits in Southern California, Los Angeles 30' x 60' Quadrangle (Revised): CGS Special Report 217, Plate 9, scale 1:100,000.

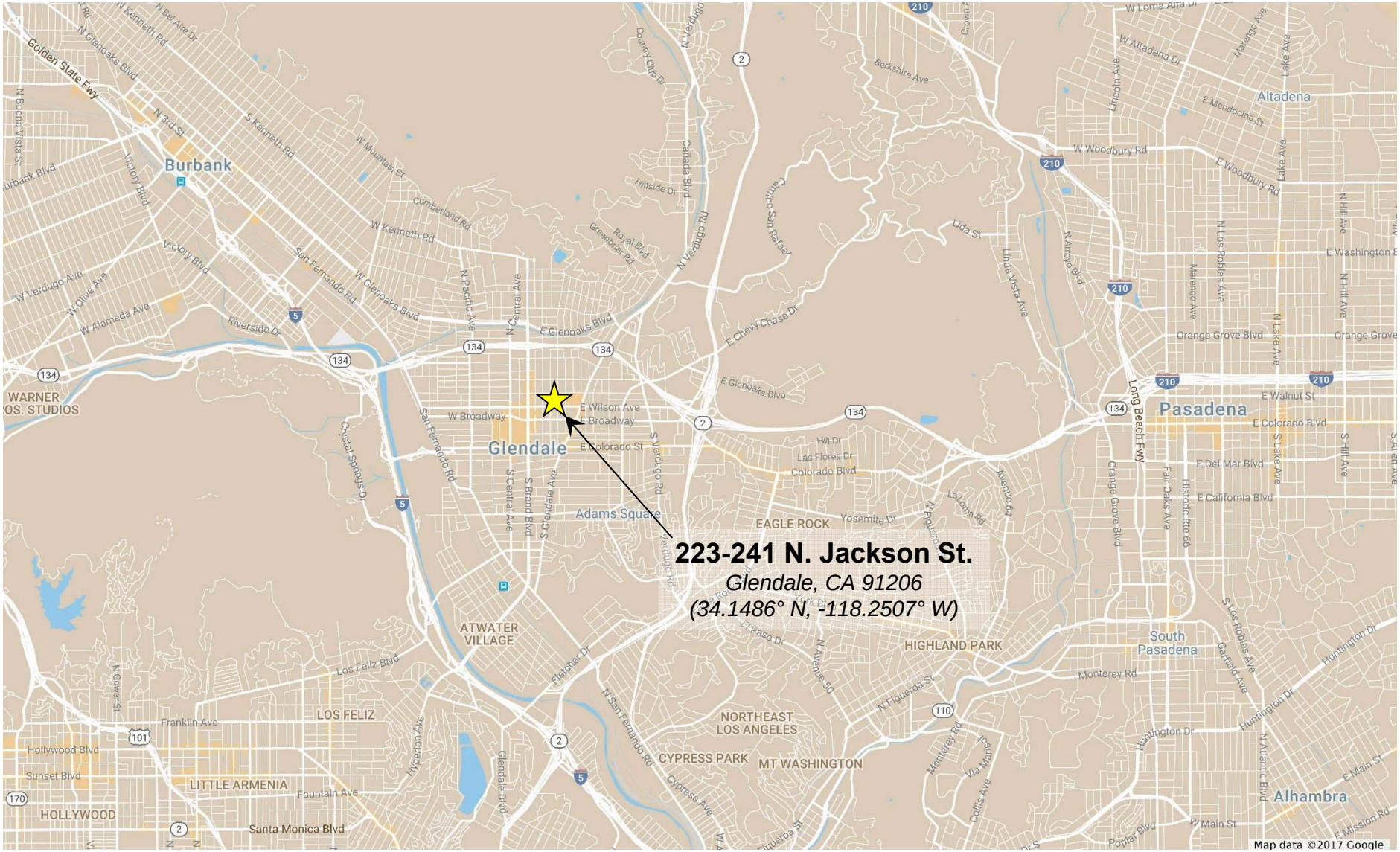
California Test Methods (CTM), California Department of Transportation (Caltrans), Sacramento, CA, http://www.dot.ca.gov/hq/esc/ctms

Federal Emergency Management Agency (FEMA), 2008, "Flood Insurance Study for Los Angeles County," September 26, 2008.

Andersen Environmental, 2015, Phase I Environmental Site Assessment, 223-237 and 241 North Jackson Street and 206 North Kenwood Street, Glendale, California 91206. Dated July 10, 2015.

Andersen Environmental, 2015, Geophysical Survey and Limited Soil Assessment, 233-237 & 241 and 241 North Jackson Street, Glendale, California 91206. Dated August 7, 2015.

FIGURES



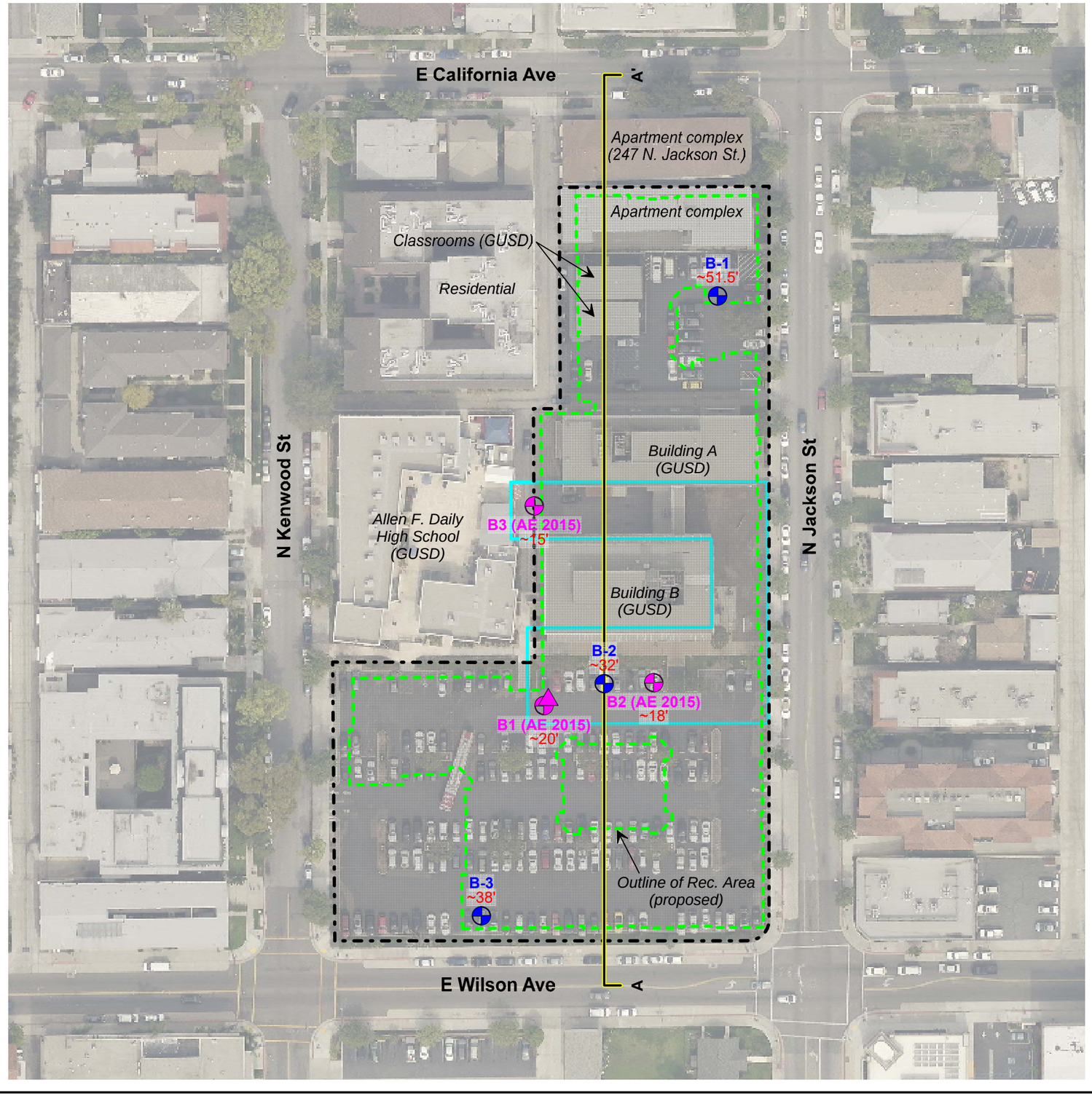
Approx. Scale (miles)

0 2 4

SITE LOCATION MAP

Date: JUL 2017	Project No.: 17064A	Project: 223-241 N. JACKSON ST.	Figure 1

GeoPentech



LEGEND

- **B-1** ~51.5' — Approximate boring location (depth shown in red) *(This investigation)*
- **B1 (AE 2015)** ~20' — Approximate boring location (depth shown in red) *(Andersen Environmental, 2015)*
- Approximate location of hand auger borings HA1 & HA2 *(Andersen Environmental, 2015)*
- Cross section
- Approximate outline of the site
- Approximate outline of the proposed development
- Outline of area surveyed with geophysical methods *(Subsurface Surveys & Associates, Inc., 2015)*

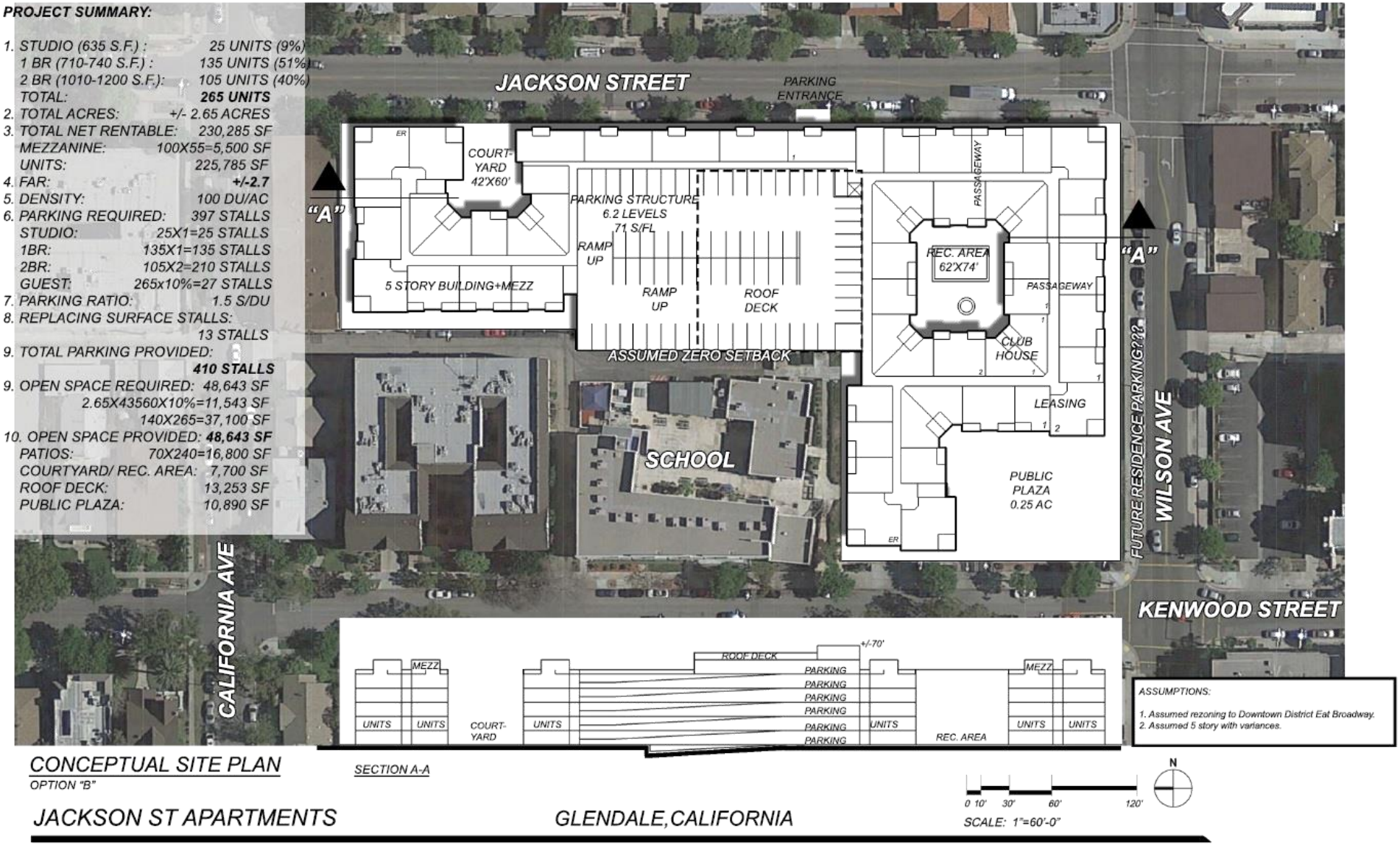
N

Approximate Scale (feet)

0 50 100 150 200

SITE PLAN		
Project: 223-241 N. JACKSON ST.		Figure 2a
Project No.: 17064A	Date: JUL 2017	

GeoPentech



Source: Architects Orange, June 2, 2017

CONCEPTUAL SITE PLAN

Date: JUL 2017	Project No.: 17064A	Project: 223-241 N. JACKSON ST.	Figure 2b

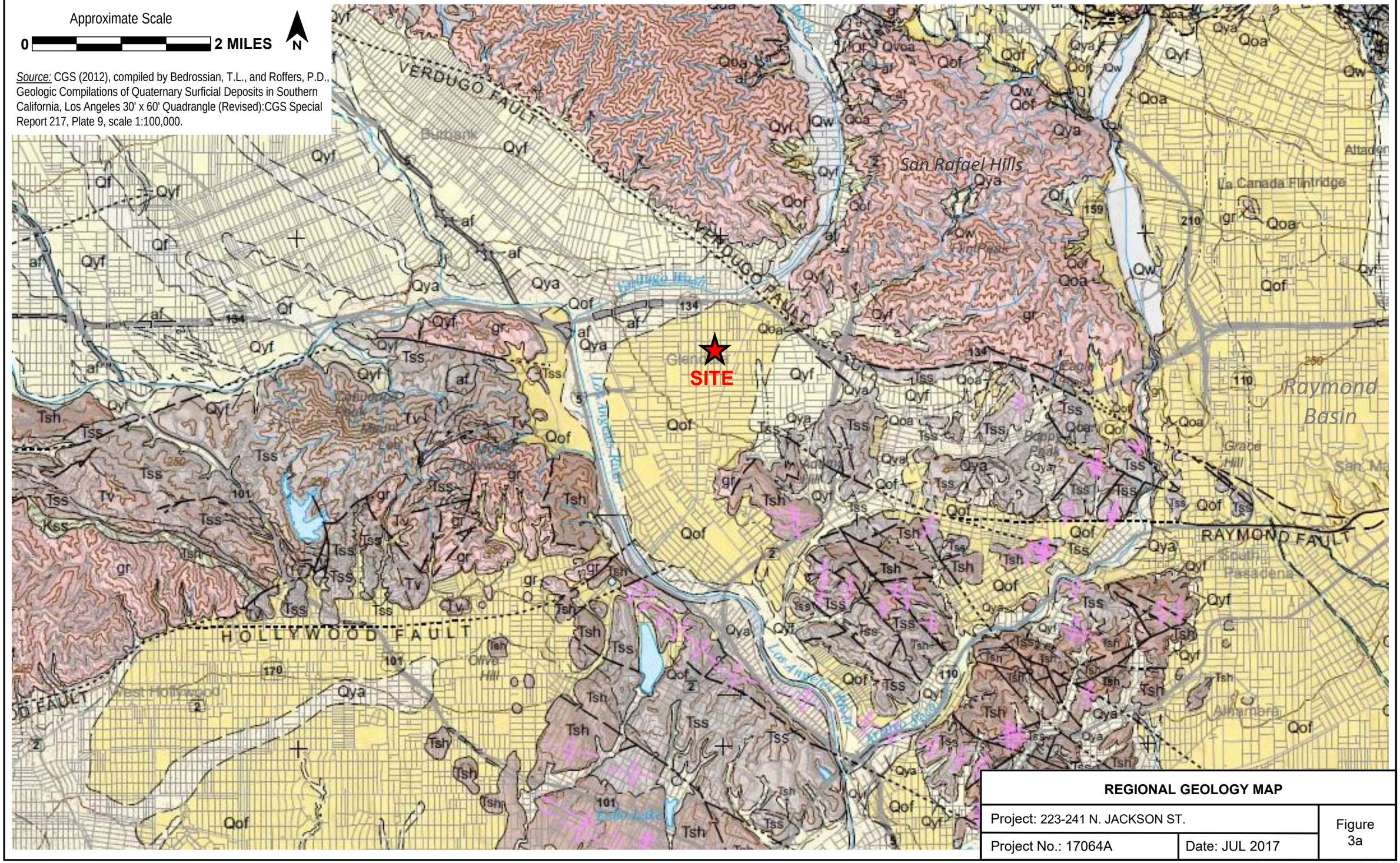
GeoPentech

Approximate Scale

0 2 MILES

N

Source: CGS (2012), compiled by Bedrossian, T.L., and Roffers, P.D., Geologic Compilations of Quaternary Surficial Deposits in Southern California, Los Angeles 30' x 60' Quadrangle (Revised):CGS Special Report 217, Plate 9, scale 1:100,000.



REGIONAL GEOLOGY MAP		
Project: 223-241 N. JACKSON ST.		Figure 3a
Project No.: 17064A	Date: JUL 2017	

GeoPentech

MAP UNITS

Late Holocene (Surficial Deposits)

af — **Artificial Fill** - deposits of fill resulting from human construction, mining, or quarrying activities; includes engineered fill for buildings, roads, dams, airport runways, harbor facilities, and waste landfills

Qsu — **Undifferentiated Surficial Deposits** - includes colluvium, slope wash, talus deposits, and other surface deposits of all ages; generally unconsolidated but locally may contain consolidated layers

Qls — **Landslide Deposits** - may include debris flows and older landslides of various earth material and movement types; unconsolidated to moderately well-consolidated

Qb — **Beach Deposits** - unconsolidated marine beach sediments consisting mostly of fine- and medium-grained, well-sorted sand

Qw — **Alluvial Wash Deposits** - unconsolidated sandy and gravelly sediment deposited in recently active channels of streams and rivers; may contain loose to moderately loose sand and silty sand

Qf — **Alluvial Fan Deposits** - unconsolidated boulders, cobbles, gravel, sand, and silt recently deposited where a river or stream issues from a confined valley or canyon; sediment typically deposited in a fan-shaped cone; gravelly sediment generally more dominant than sandy sediment

Qa — **Alluvial Valley Deposits** - unconsolidated clay, silt, sand, and gravel recently deposited parallel to localized stream valleys and/or spread more regionally onto alluvial flats of larger river valleys; sandy sediment generally more dominant than gravelly sediment

Qt — **Terrace Deposits** - includes marine and stream terrace deposits; marine deposits include slightly to moderately consolidated and bedded gravel and conglomerate, sand and sandstone, and silt and siltstone; river terrace deposits consist of unconsolidated thin- to thick-bedded gravel

Ql — **Lacustrine, Playa, and Estuarine (Paralic) Deposits** - mostly unconsolidated fine-grained sand, silt, mud, and clay from fresh water (lacustrine) lakes, saline (playa) dry lakes that are periodically flooded, and estuaries; deposits may contain salt and other evaporites

Qe — **Eolian and Dune Deposits** - unconsolidated, generally well-sorted wind-blown sand; may occur as dune forms or sheet sand

Holocene to Late Pleistocene (Surficial Deposits)

Qyf — **Young Alluvial Fan Deposits** - unconsolidated to slightly consolidated, undissected to slightly dissected boulder, cobble, gravel, sand, and silt deposits issued from a confined valley or canyon

Qya — **Young Alluvial Valley Deposits** - unconsolidated to slightly consolidated, undissected to slightly dissected clay, silt, sand, and gravel along stream valleys and alluvial flats of larger rivers

Late to Middle Pleistocene (Surficial Deposits)

Qof — **Old Alluvial Fan Deposits** - slightly to moderately consolidated, moderately dissected boulder, cobble, gravel, sand, and silt deposits issued from a confined valley or canyon

Qoa — **Old Alluvial Valley Deposits** - slightly to moderately consolidated, moderately dissected clay, silt, sand, and gravel along stream valleys and alluvial flats of larger rivers

Qot — **Old Terrace Deposits** - slightly to moderately consolidated, moderately dissected marine and stream terrace deposits

Qol — **Old Lacustrine, Playa, and Estuarine (Paralic) Deposits** - slightly to moderately consolidated, moderately dissected fine-grained sand, silt, mud, and clay from lake, playa, and estuarine deposits of various types

Middle to Early Pleistocene (Surficial Deposits)

Qvof — **Very Old Alluvial Fan Deposits** - moderately to well-consolidated, highly dissected boulder, cobble, gravel, sand, and silt deposits issued from a confined valley or canyon

Qvoa — **Very Old Alluvial Valley Deposits** - moderately to well-consolidated, highly dissected clay, silt, sand, and gravel along stream valleys and alluvial flats of larger rivers; generally uplifted and deformed

Quaternary (Bedrock)

Qss — **Coarse-grained formations of Pleistocene age and younger** - primarily sandstone and conglomerate

Qsh — **Fine-grained formations of Pleistocene age and younger** - includes fine-grained sandstone, siltstone, mudstone, shale, siliceous and calcareous sediments

Source: CGS (2012), compiled by Bedrossian, T.L., and Roffers, P.D., Geologic Compilations of Quaternary Surficial Deposits in Southern California, Los Angeles 30' x 60' Quadrangle (Revised):CGS Special Report 217, Plates 9, scale 1:100,000.

Tertiary (Bedrock)

Tss — **Coarse-grained Tertiary age formations** - primarily sandstone and conglomerate

Tsh — **Fine-grained Tertiary age formations** - includes fine-grained sandstone, siltstone, mudstone, shale, siliceous and calcareous sediments

Tv — **Tertiary age formations of volcanic origin**

Mesozoic and Older (Bedrock)

Kss — **Coarse-grained Cretaceous age formations of sedimentary origin**

Ksh — **Fine-grained Cretaceous age formations of sedimentary origin**

pKm — **Cretaceous and pre-Cretaceous metamorphic formations of sedimentary and volcanic origin**

sp — **Serpentinite of all ages**

gr — **Granitic and other intrusive crystalline rocks of all ages**

SYMBOL EXPLANATION

[For geologic line symbols: lines are solid where location is accurate, long-dashed where location is approximate, short-dashed where location is inferred, dotted where location is concealed. Queries added where identity or existence may be questionable.]

Contacts

Contact

Gradational contact

Reference contact -- Used to delineate geologic units that were mapped as separate units on the original source map, but are consolidated on this map.

Fault -- Includes strike-slip, normal, reverse, oblique, and unspecified slip

Lineament

Folds -- Showing direction of plunge where appropriate

Anticline

Overturned anticline

Syncline

Dike

Stream

Spring

Road

County boundary

REGIONAL GEOLOGY MAP LEGEND

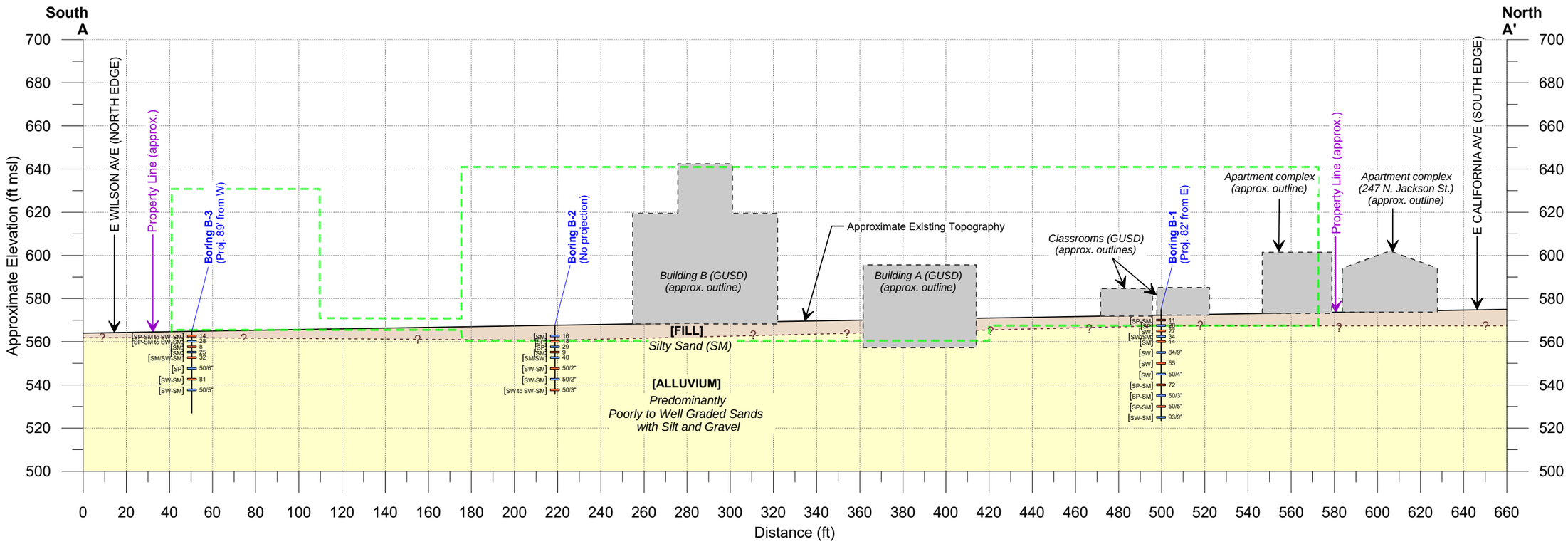
Project: 223-241 N. JACKSON ST.

Project No.: 17064A

Date: JUL 2017

Figure 3b

GeoPentech



LEGEND

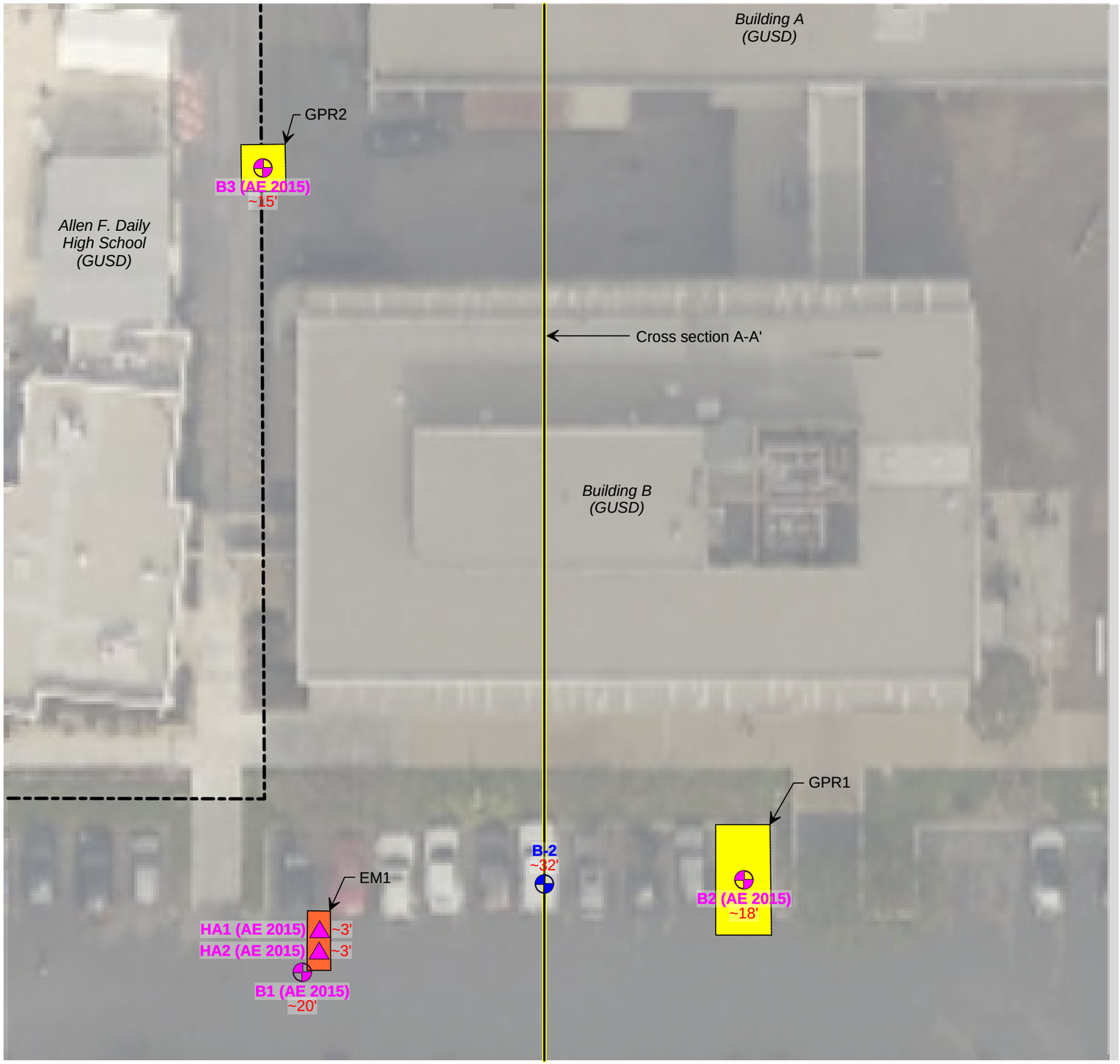
- [SM] 16 — [USCS] Measured Cal. Mod. Blowcount (per foot)
- [SM] 14 — [USCS] Measured SPT Blowcount (per foot)
- Geologic Contact (queried where uncertain)
- Approx. outline of existing building
- Approx. outline of the proposed development

Note:
Boring logs from current investigation by GeoPentech (drilled on July 6, 2017).

CROSS SECTION A-A'

Project: 223-241 N. JACKSON ST.		Figure 4
Project No.: 17064A	Date: JUL 2017	

GeoPentech



LEGEND

B-2 ~32' — Approximate boring location (depth shown in red) *(This investigation)*

B1 (AE 2015) ~20' — Approximate boring location (depth shown in red) *(Andersen Environmental, 2015)*

HA1 (AE 2015) ~3' — Approximate hand auger boring location (depth shown in red) *(Andersen Environmental, 2015)*

Cross section

Approximate outline of the site

EM anomaly (possibly buried UST) *(Subsurface Surveys & Associates, Inc., 2015)*

GPR anomaly (disturbed soils) *(Subsurface Surveys & Associates, Inc., 2015)*

N

Approximate Scale (feet)

0 10 20 30 40 50

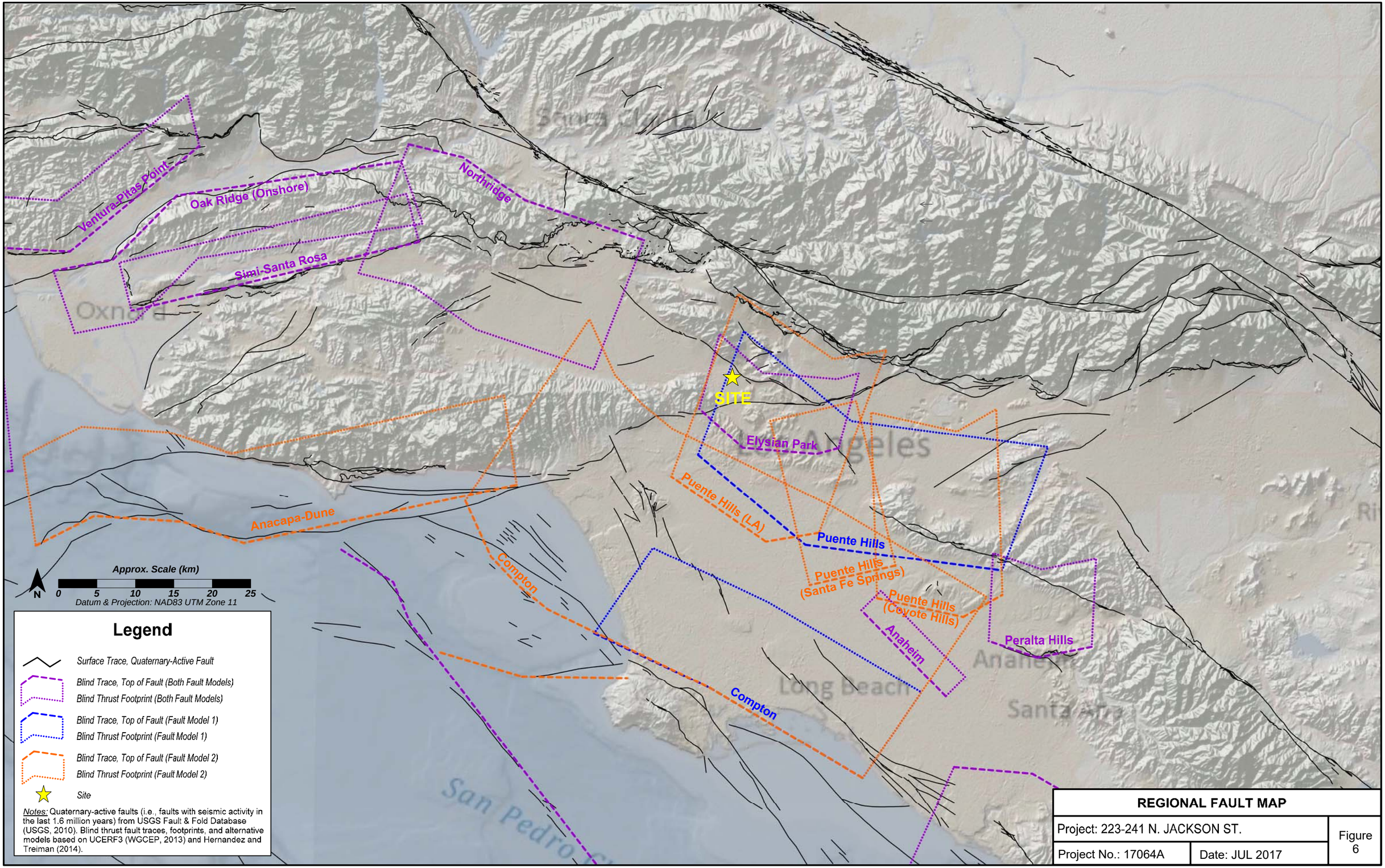
GEOPHYSICAL ANOMALIES

Project: 223-241 N. JACKSON ST.

Project No.: 17064A | Date: JUL 2017

Figure 5

GeoPentech



REGIONAL FAULT MAP

Project: 223-241 N. JACKSON ST.		Figure 6
Project No.: 17064A	Date: JUL 2017	

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APPENDIX A

FIELD EXPLORATION

A.1 FIELD EXPLORATIONS

The field explorations were performed on July 6, 2017. The explorations consisted of advancing three borings to depths varying between 32 and 51 ½ feet below the existing ground surface. The approximate locations of the borings are indicated on Figure 2a in the main report. All borings were drilled using 8-inch diameter hollow stem auger drilling equipment. The work was performed under the supervision of a geotechnical engineer or a geologist who monitored the drilling operations and prepared a field record of soils observed and drilling conditions. The drilling was subcontracted to Martini Drilling, who provided all drilling equipment, crew, and supplies.

During drilling, soil samples were obtained at approximate intervals ranging between 2.5 and 5-foot using either a Standard Penetration Test (SPT) sampler or a Modified California (CA) sampler. SPT and CA samples were taken by driving a sampler approximately 18 inches into the soil at the bottom of the boring using a 140-pound hammer falling approximately 30 inches. The truck mounted CME-75 Diesel HT rig used by Martini Drilling utilized an automatic-trip hammer.

The SPT sampler cutting shoe and barrel have nominal inside diameters of 1.375 and 1.50 inches, respectively, and a nominal outside diameter of 2.00 inches. Liners were not used. The SPT samples were placed in plastic bags, labeled, and sealed. The CA sampler cutting shoe and barrel have nominal inside diameters of 2.38 and 2.50 inches, respectively, and a nominal outside diameter of 3 inches. Nominal 6-inch long, 2.4-inch diameter brass tubes were used to line the barrel. Plastic end caps were placed on the CA tubes to help preserve the moisture content of the samples. Bulk soil samples were also obtained at certain depths in selected boreholes. Upon completion of drilling, logging, and sampling, all borings were backfilled with cuttings and patched at the surface with asphalt.

After recovering the sample, the engineer or geologist noted the depth interval, recorded a description of the recovered material onto a field log, and sealed and labeled the sample for transport to the laboratory. The soil descriptions noted on the field logs were visually classified in accordance with the Unified Soil Classification System. The results of the borehole drilling and logging effort are provided on the borehole logs, Figures A-2 through A-4, and on a key to the logs of boreholes, Figure A-1.

Project: (JSA) 223 - 241 N. Jackson Street
Project Location: 223 - 241 N. Jackson Street
Project Number: 17064A

Key to Log of Boring

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Blows / 6"	SAMPLES: Recovery, %	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS
1	2	3	4	5	6	7	8	9	10	11

COLUMN DESCRIPTIONS

1 **Elevation:** Elevation in feet referenced to mean sea level (MSL) or site datum.

2 **Depth:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

4 **Sample Number:** Sample identification number.

5 **Sampling Resistance:** Number of blows required to advance driven sampler 6 inches, or distance noted, using the drive weight listed in hammer data. Hydraulic down-pressure may be recorded for pushed samplers.

6 **Sample Recovery:** Amount (in percent) of sample recovered from sampling interval; calculated as length of sample recovered divided by run length.

7 **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.

8 **Material Description:** Description of material encountered; may include density/consistency (from field assessments), moisture, color, and grain size (f = fine, m = medium, c = coarse).

9 **Water Content:** Water content of sample, as percentage of dry weight of soil, measured in lab according to ASTM D2216.

10 **Dry Unit Weight:** The weight of soil solids per cubic foot of total volume of soil mass, measured according to ASTM D2937.

11 **Remarks and Other Tests:** Comments and observations regarding drilling or sampling made by driller or field personnel. Other lab tests are indicated using abbreviations explained below.

TYPICAL MATERIAL GRAPHIC SYMBOLS

Silty SAND (SM)

Poorly Graded SAND (SP)

Well Graded SAND (SW)

Poorly Graded SAND with Silt (SP-SM)

Well Graded SAND with Silt (SW-SM)

Poorly Graded SAND with Silt and Gravel (SP-SM)

Well Graded SAND with Silt and Gravel (SW-SM)

TYPICAL SAMPLER GRAPHIC SYMBOLS

Bulk Sample

California Modified Sampler

Standard Penetration Test

OTHER LABORATORY TEST ABBREVIATIONS

COMP	Compaction by modified effort (ASTM D1557)
CONS	One-dimensional consolidation test (ASTM D2435)
CORR	Chemical tests to determine soil corrosivity
DS	Consolidated drained direct shear test (ASTM D3080)
EI	Expansion Index (ASTM D4829), EI at 50% saturation
SA	Sieve Analysis (ASTM D422), % <#200 sieve
HYD	Hydrometer Analysis on fine-grained soils
LL	Liquid Limit from Atterberg Limits test (ASTM D4318)
PI	Plasticity Index; NP indicates non-plastic determination
R-VAL	R-Value (ASTM D2844)

OTHER GRAPHIC SYMBOLS

Contact between strata

Inferred contact between strata or gradational change

Change within material properties within a stratum

Depth of note

Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; field descriptions may have been modified to reflect lab test results. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced; they are not warranted to be representative of subsurface conditions at other locations or times.

Figure A-1

Project: (JSA) 223 - 241 N. Jackson Street
Project Location: 223 - 241 N. Jackson Street
Project Number: 17064A

Log of B-1

Sheet 1 of 2

Date(s) Drilled	**07/06/2017**	Logged By	**A. Lechnowskyj**	Checked By	**A. Harounian**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**8" HSA**	Total Depth of Borehole	**51.5 feet**
Drill Rig Type	**CME-75**	Drilling Contractor	**Martini**	Approximate Surface Elevation	**~575' MSL**
Groundwater Level(s)	**Not Encountered**	Sampling Method	**Bulk, Cal Mod, SPT**	Hammer Data	**Automatic hammer 140lbs/30" drop**
Borehole Location	**Approx. 34.1495°, -118.2503°**	Borehole Completion	**Cuttings/Asphalt Patch**		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Blows / 6"	Recovery, %	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS
575	0		B1-Bulk1				**ASPHALT**			Hand Auger from 0 to 5' bgs CORR
							BASE			
							[FILL] **Silty SAND (SM)**, moist, dark yellowish brown, f - m SAND, mechanically broken cobbles to 4"; no reaction to HCl; brick, wood, and glass debris			
							[ALLUVIUM] **Silty SAND (SM)**, moist, olive brown, f SAND, few gravel to 1"; no reaction to HCl; occasional bark debris			
570	5		B1-1	4 5 6	0.7/1.5		**Poorly Graded SAND with Silt (SP-SM)**, moist, medium dense, olive brown, f - m SAND, trace mechanically broken gravel to 1"; no reaction to HCl			
			B1-2a	6 11	100%		**Poorly Graded SAND (SP)**, moist, medium dense, olive brown, m - c SAND, trace angular gravel to 0.5"; no reaction to HCl			
			B1-2b	17	100%			1.7	105.9	DS
565	10		B1-3	6 11 16	1.2/1.5		**Well Graded SAND with Gravel (SW)**, moist, medium dense, olive brown, f - c SAND, trace angular gravel to 0.5"; no reaction to HCl			Mechanically broken gravel in cuttings to 2" @ 9.5' bgs SA: 4% < #200
			B1-4a	9 21	100%		As above			
			B1-4b	13	100%		**Silty SAND (SM)**, moist, medium dense, olive brown, f - c SAND, trace subrounded gravel to 1"; no reaction to HCl	2.4	117.4	
560	15		B1-5	4 6 8	1.5/1.5		As above			SA: 16.3% < #200
555	20		B1-6a	10 34	100%		**Well Graded SAND (SW)**, moist, very dense, olive brown, f - c SAND, few subrounded gravel to 1.5"; no reaction to HCl			
			B1-6b	50/3"	100%			1.9	119.1	
550	25		B1-7	12 24 31	1.5/1.5		As above			
545	30									

Report: GP SOIL BA LOG; File: 17064A JACKSON ST APARTMENTS.GPJ; 7/25/2017

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Figure A-2

Project: (JSA) 223 - 241 N. Jackson Street
Project Location: 223 - 241 N. Jackson Street
Project Number: 17064A

Log of B-1

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES Type	Number	Blows / 6"	Recovery, %	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS
545	30		B1-8b	50/4"	70%		As above	2.0	101.0	
										Rig chatter at 32' bgs
540	35		B1-9	26 32 40	1.2/1.5		**Poorly Graded SAND with Silt and Gravel (SP-SM)**, moist, very dense, light olive brown, f - c SAND, mechanically broken angular to subrounded gravel to 2"; black mottling; no reaction to HCl			
535	40		B1-10b	50/3"	100%		As above	4.4	111.5	
										Rig chatter at ~43' bgs
530	45		B1-11	50/5"	1.3/1.5		becomes dark yellowish brown			
525	50		B1-12a B1-12b	50 43 50/3"	90% 100%		**Well Graded SAND with Silt and Gravel (SW-SM)**, moist, very dense, dark olive brown, f - c SAND, mechanically broken angular gravel to 1"; no reaction to HCl; grades to light olive, non mechanically broken gravel to 1.5"	4.9	107.5	
							Total Depth = 51.5' bgs			
520	55									
515	60									
510	65									

Report: GP SOIL BA LOG; File: 17064A JACKSON ST APARTMENTS.GPJ; 7/25/2017

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Figure A-3

Project: (JSA) 223 - 241 N. Jackson Street
Project Location: 223 - 241 N. Jackson Street
Project Number: 17064A

Log of B-2

Sheet 1 of 2

Date(s) Drilled	**07/06/2017**	Logged By	**A. Lechnowskyj**	Checked By	**A. Harounian**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**8" HSA**	Total Depth of Borehole	**32.0 feet**
Drill Rig Type	**CME-75**	Drilling Contractor	**Martini**	Approximate Surface Elevation	**~568' MSL**
Groundwater Level(s)	**Not Encountered**	Sampling Method	**Bulk, Cal Mod, SPT**	Hammer Data	**Automatic hammer 140lbs/30" drop**
Borehole Location	**Approx. 34.1487°, -118.2506°**	Borehole Completion	**Cuttings/Asphalt Patch**		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Blows / 6"	Recovery, %	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS
	0		B2-Bulk1				**ASPHALT**			Hand Auger from 0 to 5' bgs No base
							[FILL] **Silty SAND (SM)**, moist, dark yellowish brown, f - m SAND, few angular to subrounded gravel to 2"; no reaction to HCl; brick fragments			COMP Brick fragments @ 1.5' bgs
565										
	5		B2-1a	5 7	100%		As above			
			B2-1b	9	100%			7.2	109.9	
560			B2-2	5 8 10	1.5/1.5		**[Alluvium]** **Poorly Graded SAND (SP)**, moist, medium dense, olive brown, f - c SAND, trace mechanically broken gravel to 0.5"; no reaction to HCl			SA: 2% < #200
	10		B2-3a	16 13	100%		As above			
			B2-3b	16	100%			2.5	101.8	DS
555			B2-4	3 3 6	1.5/1.5		**Silty SAND (SM)**, moist, loose, olive brown, f - m SAND, few c SAND; no reaction to HCl			SA: 25.3% < #200
	15		B2-5a	7 12	100%		becomes medium dense, subrounded gravel to 1"			
			B2-5b	28	100%		**Well Graded SAND (SW)**, moist, medium dense, olive brown, f - c SAND, gravel to 1.5"	9.7	120.1	
550										
	20		B2-6	24 50/2"	0.7/1.5		**Well Graded SAND with Silt and Gravel (SW-SM)**, moist, very dense, olive brown, f - c SAND, mechanically and non-mechanically broken angular to subrounded gravel to 2"; no reaction to HCl			Mechanically broken gravel to 2" in cuttings @ 19' bgs and in slough of B2-6
545										Rig chatter @ 22 - 22.5' bgs
	25		B2-7b	50/2"	80%		As above; mechanically broken angular gravel to 3"	2.2	107.1	B2-7b primarily slough
540										Rig chatter @ 29.5 - 30 Subrounded mechanically and non-mechanically broken rocks to 1.5" in cuttings
	30									

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Figure A-4

Project: (JSA) 223 - 241 N. Jackson Street
Project Location: 223 - 241 N. Jackson Street
Project Number: 17064A

Log of B-2

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Blows / 6"	SAMPLES Recovery, %	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS
	30		B2-8	44 50/3"	1.0/1.5		**Well Graded SAND (SW) to Well Graded SAND with Silt (SW-SM)**, moist, very dense, light olive brown, f - c SAND, trace mechanically broken gravel to 1"; no reaction to HCl			Mechanically broken gravel in slough to 1'
535							**Total Depth = ~32' bgs**			Mechanically broken subrounded cobble to 0.5' @ 32' bgs Cuttings are Silty SAND (SM) Refusal @ ~32'
	35									
530										
	40									
525										
	45									
520										
	50									
515										
	55									
510										
	60									
505										
	65									

Report: GP SOIL BA LOG; File: 17064A JACKSON ST APARTMENTS.GPJ; 7/25/2017

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Figure A-5

Project: (JSA) 223 - 241 N. Jackson Street
Project Location: 223 - 241 N. Jackson Street
Project Number: 17064A

Log of B-3

Sheet 1 of 2

Date(s) Drilled	**07/06/2017**	Logged By	**A. Lechnowskyj**	Checked By	**A. Harounian**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**8" HSA**	Total Depth of Borehole	**38.0 feet**
Drill Rig Type	**CME-75**	Drilling Contractor	**Martini**	Approximate Surface Elevation	**~565' MSL**
Groundwater Level(s)	**Not Encountered**	Sampling Method	**Bulk, Cal Mod, SPT**	Hammer Data	**Automatic hammer 140lbs/30" drop**
Borehole Location	**Approx. 34.1483°, -118.2509°**	Borehole Completion	**Cuttings/Asphalt Patch**		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Blows / 6"	Recovery, %	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS
565	0		B3-Bulk1				**ASPHALT**			Hand Auger from 0 to 5' bgs No base
							[FILL] **Silty SAND (SM)**, moist, dark yellowish brown, f - m SAND, few angular to subrounded gravel to 2"; no reaction to HCl			R-VAL: 75
560	5		B3-1	7 7 7	1.0/1.5		**[Alluvium]** **Poorly Graded SAND with Silt (SP-SM) to Well Graded SAND with Silt (SW-SM)**, moist, medium dense, dark olive, f - c SAND; no reaction to HCl			SA: 9.2% < #200
			B3-2a B3-2b	8 12 16	100% 100%		As above	3.6	98.7	DS
555	10		B3-3	3 4 4	0.75/1.5		**Silty SAND (SM)**, moist, loose, olive brown, f SAND, trace c SAND, trace mechanically broken gravel to 1"; no reaction to HCl			SA: 30.6% < #200
			B3-4a B3-4b	8 11 14	100% 100%		becomes medium dense, f - c SAND, trace mechanically broken gravel to 0.5"	5.8	115.4	
550	15		B3-5a B3-5b	13 14 18	1.4/1.5		becomes dense, f SAND, few c SAND **Well Graded SAND with Silt and Gravel (SW-SM)**, moist, dense, olive brown, f - c SAND, subrounded gravel to 2"; no reaction to HCl			
545	20		B3-6a B3-6b	11 50/6"	95% 100%		**Poorly Graded SAND (SP)**, moist, very dense, light olive brown, m - c SAND; black mottling; no reaction to HCl	3.6	101.9	
540	25		B3-7	23 37 44	1.2/1.5		**Well Graded SAND with Silt (SW-SM)**, moist, very dense, light olive brown, f - m SAND, trace mechanically and non-mechanically broken subrounded gravel to 1.5"; no reaction to HCl			
535	30									

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Figure A-6

Project: (JSA) 223 - 241 N. Jackson Street
Project Location: 223 - 241 N. Jackson Street
Project Number: 17064A

Log of B-3

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Blows / 6"	SAMPLES Recovery, %	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS
535	30		B3-8b	50/5"	90%		becomes f - c SAND	4.0	118.1	
530	35									
							Total Depth = ~38' bgs			Rig chatter @ 38' bgs Refusal @ ~38'
525	40									
520	45									
515	50									
510	55									
505	60									
500	65									

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Figure A-7

APPENDIX B

PRIOR FIELD EXPLORATIONS

Andersen Environmental

Boring Logs and Geophysical Data

Report Dated August 7, 2015

(APN: 5642-017-901)

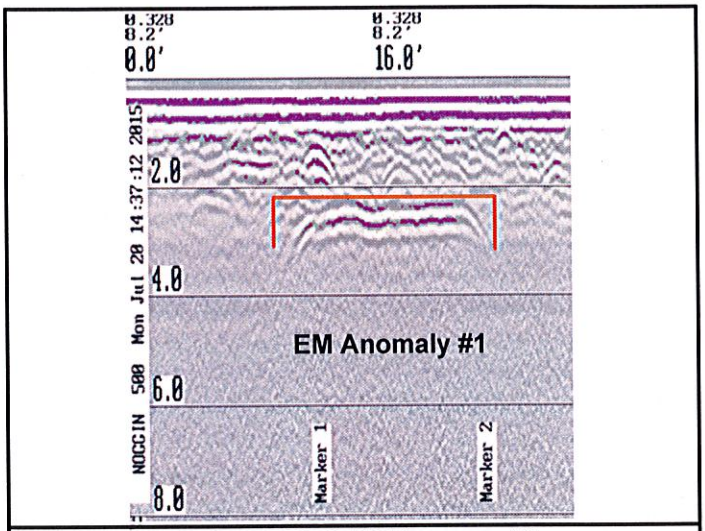

Figure 20: GPR Traverse #1

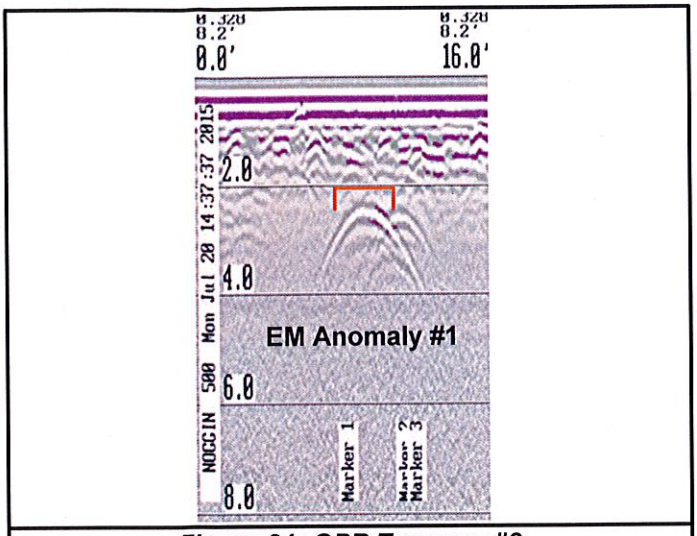

Figure 21: GPR Traverse #2

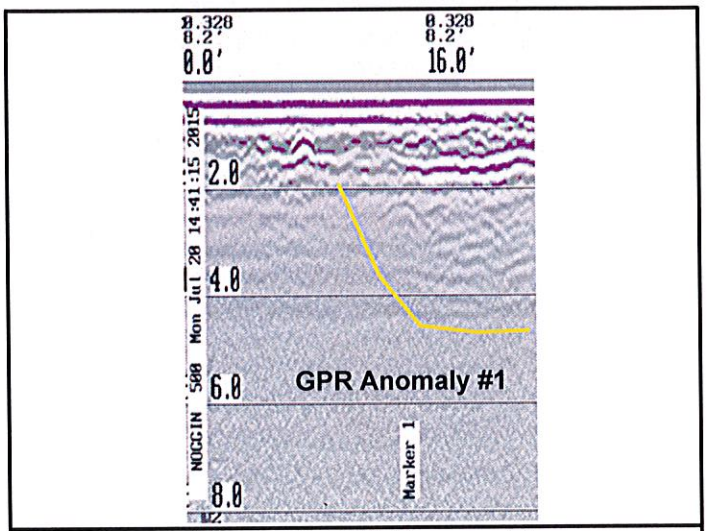

Figure 22: GPR Traverse #3

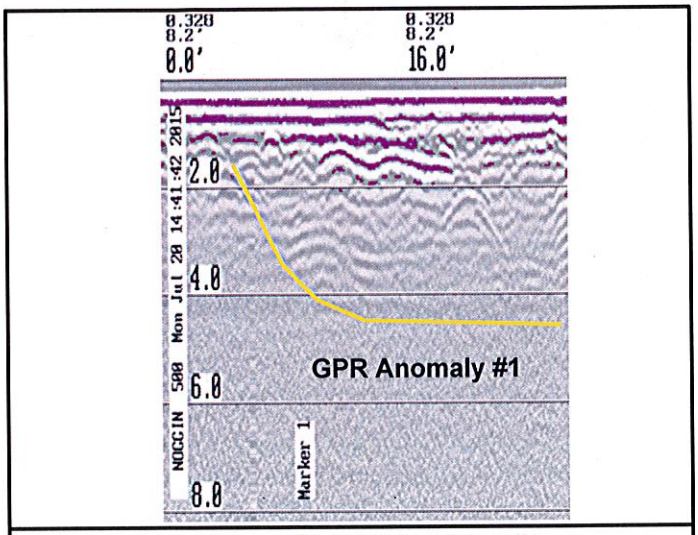

Figure 23: GPR Traverse #4

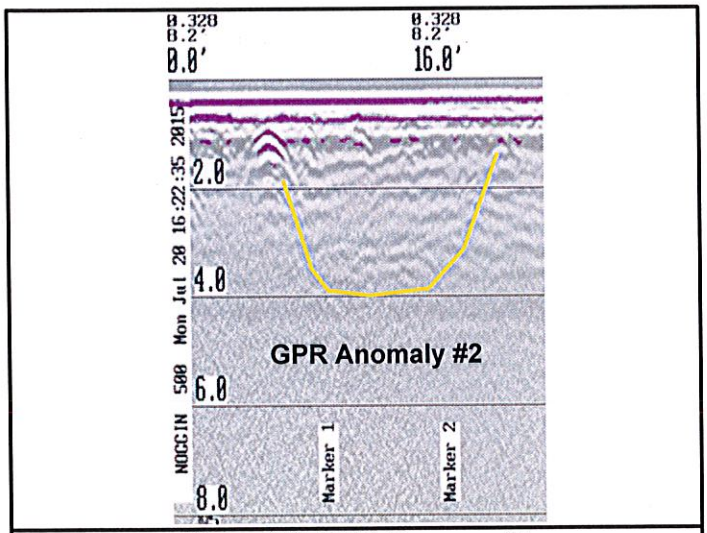

Figure 24: GPR Traverse #5

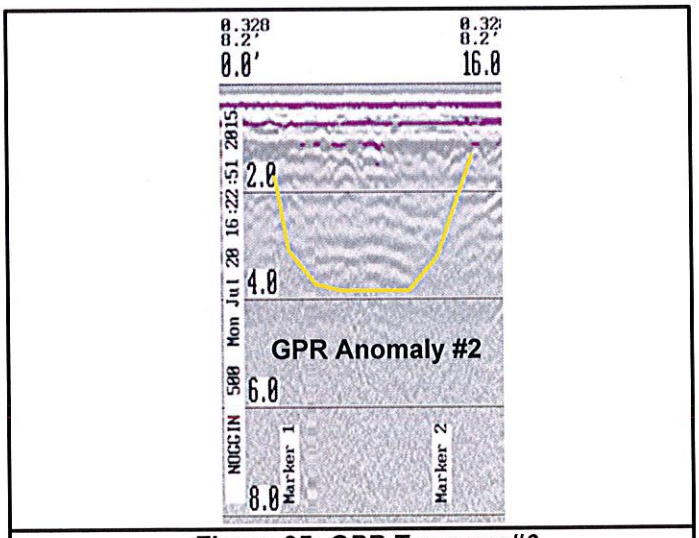

Figure 25: GPR Traverse #6

Sub Surface Surveys	SITE: 233 North Jackson Street Glendale, California	TITLE: Radar Images	SURVEY DATE: July 20th, 2015
		PREPARED FOR: Andersen Environmental	SSS PROJECT NO: 15-265

ANDERSEN ENVIRONMENTAL

BORING LOG

BORING: B1

PROJECT NO.: 1507-1197	DATE(S) DRILLED: 7-30-2015	PAGE 1 OF 2	
PROJECT NAME:	LOGGED BY: Lowell Stelts	START TIME: 6:45	END TIME: 7:10
PROJECT ADDRESS: 233-237+241 N. Jackson St. Glendale, CA		DRILLING METHOD & RIG: Direct Push / Truck	
DEPTH TO GROUNDWATER: NA	BOREHOLE DIAMETER: 1½"	DRILLING CONTRACTOR / DRILLER NAME: Minute Man / Alex	
TERMINAL DEPTH: 20'	PID CAL GAS/DATE:	SAMPLING METHOD: Acetate	

TIME	BC	SAMPLE ID	R	SI	DEPTH	PID	USCS	LITHOLOGY	COMPLETION
								Asphalt 2"	
					1				
					2				
					3				
					4		SM	Silty Sand Sand is fine to med yellowish red, damp small ant. gravel	
6:50		B1-5'			5	0.0			
					6				
					7				
					8				
					9		SP	Sand Poorly Graded Sand is fine to med lt. brown, damp	
6:55		B1-10'			10	0.1			

BC - BLOW COUNT R - RECOVERY SI - SAMPLE INTERVAL

ANDERSEN ENVIRONMENTAL

BORING LOG

BORING: B1

PROJECT NO.: 1507-1197

LOGGED BY: Lowell Stehs

PROJECT NAME:

PROJECT ADDRESS:

NOTES: (1) End bore at 20'
(2) No odors
(3) No visible stains
(4) No water
(5) Backfilled with hydrated bentonite and patched.

TIME	BC	SAMPLE ID	R	SI	DEPTH	PID	USCS	LITHOLOGY	COMPLETION
					10				
					11				11
					12				12
					13		SP	Sand Poorly Graded Sand is fine to med lt. brown, damp w/ gravel	13
					14				14
7:00		B1-15'			15	0.1			15
					16				16
					17				17
					18		SP	Sand Poorly Graded Sand is fine to med lt. brown, damp w/ gravel	18
					19				19
7:10		B1-20'			20	0.2			20

BC - BLOW COUNT R - RECOVERY SI - SAMPLE INTERVAL

ANDERSEN ENVIRONMENTAL

BORING LOG

BORING: B2

PROJECT NO.: 1507-1197	DATE(S) DRILLED: 7-30-2015	PAGE 1 OF 2	
PROJECT NAME:	LOGGED BY: Lowell Stelts	START TIME: 7:30	END TIME: 8:00
PROJECT ADDRESS: 233-237 & 241 N Jackson St. Glendale, CA.		DRILLING METHOD & RIG: Direct Push / Truck	
DEPTH TO GROUNDWATER: NA	BOREHOLE DIAMETER: 1½"	DRILLING CONTRACTOR / DRILLER NAME: Minute Man / Alex	
TERMINAL DEPTH: 18'	PID CAL GAS/DATE:	SAMPLING METHOD: Acetate	

TIME	BC	SAMPLE ID	R	SI	DEPTH	PID	USCS	LITHOLOGY	COMPLETION
								Asphalt 2"	
					1				
					2				
					3		SP	Sand Poorly Graded Sand is fine to med Hbrown & yellowish red damp (Possible Fill)	
					4				
7:40		B2-5'			5	0.2			
					6				
					7				
					8		SP	Sand Poorly Graded Sand is fine to med Hbrown, damp w/gravel	
					9				
7:45		B2-10'			10	0.2			

BC - BLOW COUNT R - RECOVERY SI - SAMPLE INTERVAL

ANDERSEN ENVIRONMENTAL

BORING LOG

BORING: B2

PROJECT NO.: 1507-1197

LOGGED BY: Lowell Stehs

PAGE 2 OF 2

PROJECT NAME:

PROJECT ADDRESS:

NOTES:
(1) Bore terminated at 18' due to dense soil conditions (refusal)
(2) No odors
(3) No visible stains.
(4) No water
(5) Backfilled with hydrated bentonite and patched.

TIME	BC	SAMPLE ID	R	SI	DEPTH	PID	USCS	LITHOLOGY	COMPLETION
					t 10				
					11				11
					12				12
					13		SP	Sand Poorly Graded Sand is fine to med H brown, damp w/ gravel	13
					14				14
7:50		B2-15'			15	0.1	SM	6" lense of Silty Sand yellowish red in color fine sand, damp	15
					16				16
					17		SP	Sand Poorly Graded Sand is fine to med H brown, damp w/ gravel	17
8:00		B2-18'			18	0.2			18
					19				19
					20				20

BC - BLOW COUNT R - RECOVERY SI - SAMPLE INTERVAL

ANDERSEN ENVIRONMENTAL

BORING LOG

BORING: B3

PROJECT NO.: 1507-1197	DATE(S) DRILLED: 7-30-2015	PAGE 1 OF 2
PROJECT NAME:	LOGGED BY: Lowell Stetts	START TIME: 8:45 / END TIME: 9:00
PROJECT ADDRESS: 233-237+241 N. Jackson St. Glendale, CA		DRILLING METHOD & RIG: Direct Push / Truck
DEPTH TO GROUNDWATER: NA	BOREHOLE DIAMETER: 1½"	DRILLING CONTRACTOR / DRILLER NAME: MinuteMan / Alex
TERMINAL DEPTH: 15'	PID CAL GAS/DATE:	SAMPLING METHOD: Acetate

TIME	BC	SAMPLE ID	R	SI	DEPTH	PID	USCS	LITHOLOGY	COMPLETION
								Asphalt 3"	
					1				
					2		SM	Silty Sand Sand is fine yellowish red, damp (Possible fill)	
					3				
					4				
8:45		B3-5'			5	0.3		Sand Poorly Graded Sand is fine to med H brown, damp	
					6		SP		
					7				
					8			Sand Poorly Graded Sand is fine to med H brown, damp w/ gravel	
					9				
8:50		B3-10'			10	0.3			

BC - BLOW COUNT R - RECOVERY SI - SAMPLE INTERVAL

ANDERSEN ENVIRONMENTAL

BORING LOG

BORING: B3

PROJECT NO.: 1507-1197

LOGGED BY: Lowell Stelts

PAGE 2 OF 2

PROJECT NAME:

PROJECT ADDRESS:

NOTES:
1. End bore at 15 due to refusal (dense soil cond.)
2. No odors
3. No visible stains
4. No water
5. Backfilled with hydrated bentonite and patched

TIME	BC	SAMPLE ID	R	SI	DEPTH	PID	USCS	LITHOLOGY	COMPLETION
					℄10'				
					11				11
					12		SP	Sand Poorly Graded Sand is fine toned H brown, damp w/ gravel	12
					13				13
					14				14
9:00		B3-15'			15	0.2	XXX	refusal at 15' due to dense soil conditions.	15
					16				16
					17				17
					18				18
					19				19
					20				20

BC - BLOW COUNT R - RECOVERY SI - SAMPLE INTERVAL

APPENDIX C

LABORATORY TESTING

C.1 LABORATORY TESTING

The laboratory testing program performed by GeoPentech for the proposed project site included the following tests: moisture content, dry density, sieve analysis, wash analysis, direct shear, compaction, R-value, and corrosion. The geotechnical testing was conducted at the laboratory facilities of AP Engineering and Testing, Inc. in Pomona, California. The tests were performed in general accordance with applicable procedures of ASTM and the State of California Department of Transportation, Standard Test Methods (DOT CA). The results of the laboratory testing, provided in a letter by AP Engineering & Testing, Inc. dated July 24, 2017, are included in this Appendix and are summarized in Table C-1 and on the boring logs in Appendix A. GeoPentech has reviewed the results of the laboratory testing and finds them acceptable. Brief descriptions of each test are presented in the following sections.

C.1.1 Moisture Content and Dry Density

For selected Modified California samples, the dry unit weight (in units of pounds-per-cubic-foot) and field moisture content (%) were measured in general accordance with ASTM D2937 and ASTM D2216, respectively, or with ASTM D7263.

C.1.2 Sieve Analysis and Wash Analysis

For selected samples, the particle-size distribution was determined by sieve analysis in general accordance with ASTM D6913. Sieve sizes ranged from ¾ in to 75 µm (No. 200).

For other selected samples, the percentage of fines (material passing the No. 200 sieve) was measured by wash analysis in accordance with ASTM D1140.

C.1.3 Direct Shear

Direct shear tests were performed on selected Modified California samples in accordance with ASTM D3080 to measure peak and ultimate strength parameters. Shear stress and sample deformation were monitored throughout the tests.

C.1.4 Compaction

Modified Proctor compaction testing was performed on a selected bulk soil sample. This test measures the effect of soil moisture content on the density achievable from compaction. By compacting soil samples with varying moisture contents, the maximum density achievable and associated “optimum” moisture content may be determined. The testing was conducted in general accordance with ASTM D1557 Method A.

C.1.5 R-value

R-value testing was performed on selected samples to provide information for paving design. The test evaluates the resistance (R-value) of a compacted soil sample through use of a stabilometer. The testing was conducted in accordance with ASTM D2844.

C.1.6 Corrosion Tests

Soil samples were tested for electrical resistivity, pH, sulfate content, and chloride content. These tests were performed in general accordance with DOT CA test methods 643 (electrical resistivity and pH), 417 (sulfate content), and 422 (chloride content). The test results were used to evaluate the corrosivity potential of the soil on underground improvements associated with the proposed structure.

TABLE C-1
SUMMARY OF SOIL LABORATORY TESTING
223-241 N. JACKSON ST.

Location			Classification	Initial Condition			Limits		Gradation			Direct Shear			Compaction			EI	R-value	Chem
Boring Number	Sample/ Specimen Number	Depth (ft)	USCS Symbol	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Liquid Limit	Plasticity Index	Gravel (%)	Sand (%)	Fines (%)	Normal Stress Sequence (ksf)	Friction Angle @ Peak (deg)	Strength Intercept @ Peak (ksf)	ASTM Test Method	Max. Dry Unit Weight (pcf)	Opt. Water Content (%)	Expansion Index, EI @ 50% S	R-value (ASTM D2844)	Corrosivity Suite
B-1	Bulk-1	0-5	SM																	Comp.
B-1	2b	8.5	SP	1.7	107.7	105.9						1.0, 2.0, 3.0	38	200						
B-1	3	10	SW						18.0	78.0	4.0									
B-1	4b	13.5	SM	2.4	120.2	117.4														
B-1	5	15	SM								16.3									
B-1	6b	21	SW	1.9	121.4	119.1														
B-1	8b	31	SW	2.0	103.0	101.0														
B-1	10b	41	SW-SM to SP-SM	4.4	116.4	111.5														
B-1	12b	51	SW-SM	4.9	112.8	107.5														
B-2	Bulk-1	0-5	SM												ASTM D1557-A	126.4	8.8			
B-2	1b	6	SM	7.2	117.8	109.9														
B-2	2	7.5	SP						9.0	89.0	2.0									
B-2	3b	11	SP	2.5	104.3	101.8						1.0, 2.0, 3.0	37	150						
B-2	4	12.5	SM								25.3									
B-2	5b	16	SW	9.7	131.7	120.1														
B-2	7b	26	SW-SM	2.2	109.5	107.1														

TABLE C-1
SUMMARY OF SOIL LABORATORY TESTING
223-241 N. JACKSON ST.

Location			Classification	Initial Condition			Limits		Gradation			Direct Shear			Compaction			EI	R-value	Chem
Boring Number	Sample/ Specimen Number	Depth (ft)	USCS Symbol	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Liquid Limit	Plasticity Index	Gravel (%)	Sand (%)	Fines (%)	Normal Stress Sequence (ksf)	Friction Angle @ Peak (deg)	Strength Intercept @ Peak (ksf)	ASTM Test Method	Max. Dry Unit Weight (pcf)	Opt. Water Content (%)	Expansion Index, EI @ 50% S	R-value (ASTM D2844)	Corrosivity Suite
B-3	Bulk 1	0-5	SM																75	
B-3	1	5	SP-SM to SW-SM								9.2									
B-3	2b	8.5	SP-SM to SW-SM	3.6	102.2	98.7						1.0, 2.0, 3.0	36	250						
B-3	3	10	SM								30.6									
B-3	4b	13.5	SM	5.8	122.1	115.4														
B-3	6b	21	SP	3.6	105.6	101.9														
B-3	8b	31	SP to SP-SM	4.0	122.8	118.1														

AP Engineering & Testing, Inc.

A Certified DBE/MBE/SBE Company

July 24, 2017

To: GeoPentech, Inc.
5251 California Ave, Suite 210
Irvine, California 92617

Attention: Alek Harounian, P.E.

Subject: Laboratory Test Report
Project Name: Jackson Street Apartments (JSA)
Project No.: 17064A

Dear Alek,

This letter is to certify that AP Engineering and Testing has performed laboratory soil tests for the subject project. The laboratory testing program as requested by you consisted of:

- 11 Moisture Content & Density (ASTM D 2216 & D 2937)
- 1 Corrosion Suite (CTM 417, 422 & 643)
- 4 Percent Passing #200 Sieve (ASTM D 1140)
- 1 Modified Proctor Compaction (ASTM D 1557)
- 2 Sieve Analysis (ASTM D 6913)
- 1 R-Value (ASTM D 2844)
- 3 Direct Shear (ASTM D 3080)

All tests were performed in accordance with the applicable standards as indicated above under the supervision of a registered geotechnical engineer. Attached please find the test results.

We appreciate the opportunity to be of service to you. Should you have any questions, please call our office at your convenience.

Respectfully submitted,

AP Engineering and Testing, Inc.
Certificate No. 10130

Apichart Phukunhaphan, P.E., G.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
APICHART PHUKUNHAPHAN
No. 002156
Exp. 12/31/17
GEOTECHNICAL
STATE OF CALIFORNIA

Distribution: 1 Addressee

Attachments: Laboratory Test Results

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MOISTURE AND DENSITY TEST RESULTS

Client: GeoPentech
Project Name: Jackson Street Apartments (JSA)
Project No.: 17064A

AP Lab No.: 17-0725
Date: 07/19/17

Boring No.	Sample No.	Sample Depth (ft.)	Moisture Content (%)	Dry Density (pcf)
B-1	4b	13.5	2.4	117.4
B-1	6b	21	1.9	119.1
B-1	8b	31	2.0	101.0
B-1	10b	41	4.4	111.5
B-1	12b	51	4.9	107.5

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MOISTURE AND DENSITY TEST RESULTS

Client: GeoPentech
Project Name: Jackson Street Apartments (JSA)
Project No.: 17064A

AP Lab No.: 17-0725
Date: 07/19/17

Boring No.	Sample No.	Sample Depth (ft.)	Moisture Content (%)	Dry Density (pcf)
B-2	1b	6	7.2	109.9
B-2	5b	16	9.7	120.1
B-2	7b	26	2.2	107.1

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MOISTURE AND DENSITY TEST RESULTS

Client: GeoPentech
Project Name: Jackson Street Apartments (JSA)
Project No.: 17064A

AP Lab No.: 17-0725
Date: 07/19/17

Boring No.	Sample No.	Sample Depth (ft.)	Moisture Content (%)	Dry Density (pcf)
B-3	4b	13.5	5.8	115.4
B-3	6b	21	3.6	101.9
B-3	8b	31	4.0	118.1

PERCENT PASSING NO. 200 SIEVE

ASTM D1140

Client: GeoPentech
AP Lab No.: 17-0725
Project Name: Jackson Street Apartments (JSA)
Test Date: 07/14/17
Project Number: 17064A

Boring No.	Sample No.	Depth (ft)	Percent Fines (%)
B-1	5	15	16.3

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PERCENT PASSING NO. 200 SIEVE

ASTM D1140

Client:	GeoPentech	AP Lab No.:	17-0725
Project Name:	Jackson Street Apartments (JSA)	Test Date:	07/14/17
Project Number:	17064A		

Boring No.	Sample No.	Depth (ft)	Percent Fines (%)
B-2	4	12.5	25.3

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PERCENT PASSING NO. 200 SIEVE

ASTM D1140

Client:	GeoPentech	AP Lab No.:	17-0725
Project Name:	Jackson Street Apartments (JSA)	Test Date:	07/14/17
Project Number:	17064A		

Boring No.	Sample No.	Depth (ft)	Percent Fines (%)
B-3	1	5	9.2
B-3	3	10	30.6

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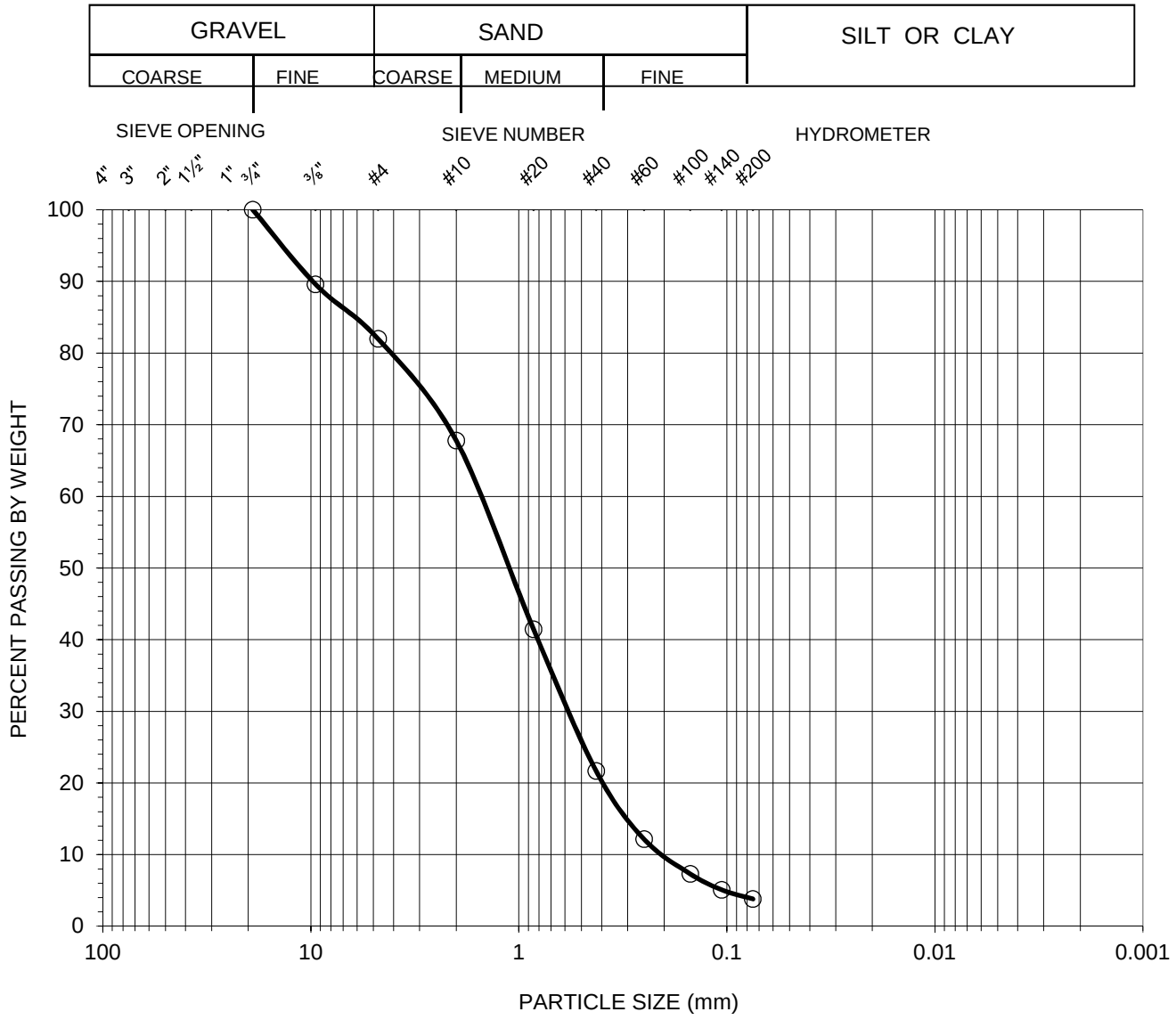
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913

Client Name:	GeoPentech	Tested by:	NG	Date:	07/17/17
Project Name:	Jackson Street Apartments (JSA)	Computed by:	JP	Date:	07/19/17
Project Number:	17064A	Checked by:	AP	Date:	07/19/17



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	B-1	3	10	18	78	4	N/A	SW

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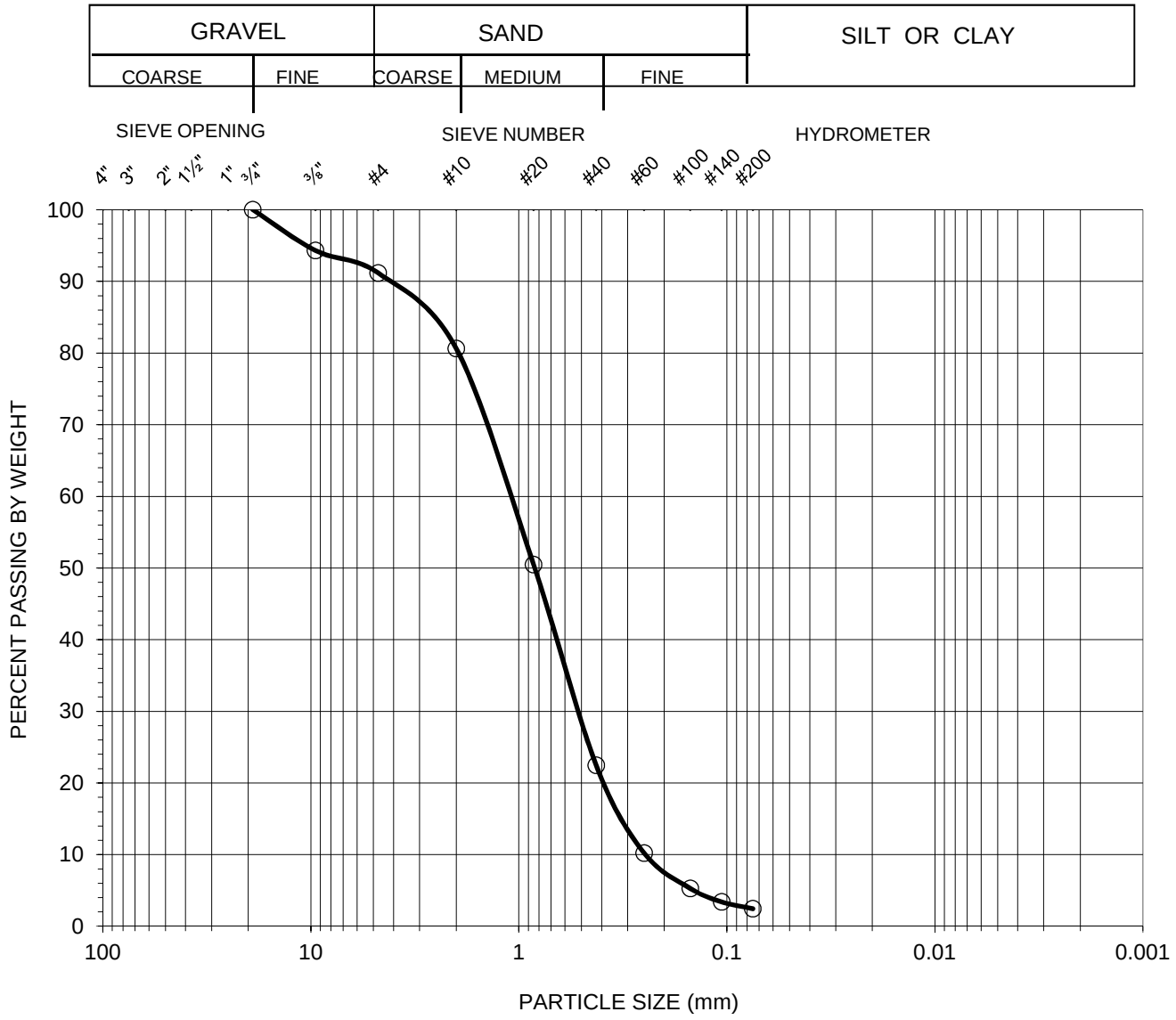
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913

Client Name:	GeoPentech	Tested by:	NG	Date:	07/17/17
Project Name:	Jackson Street Apartments (JSA)	Computed by:	JP	Date:	07/19/17
Project Number:	17064A	Checked by:	AP	Date:	07/19/17



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	B-2	2	7.5	9	89	2	N/A	SP

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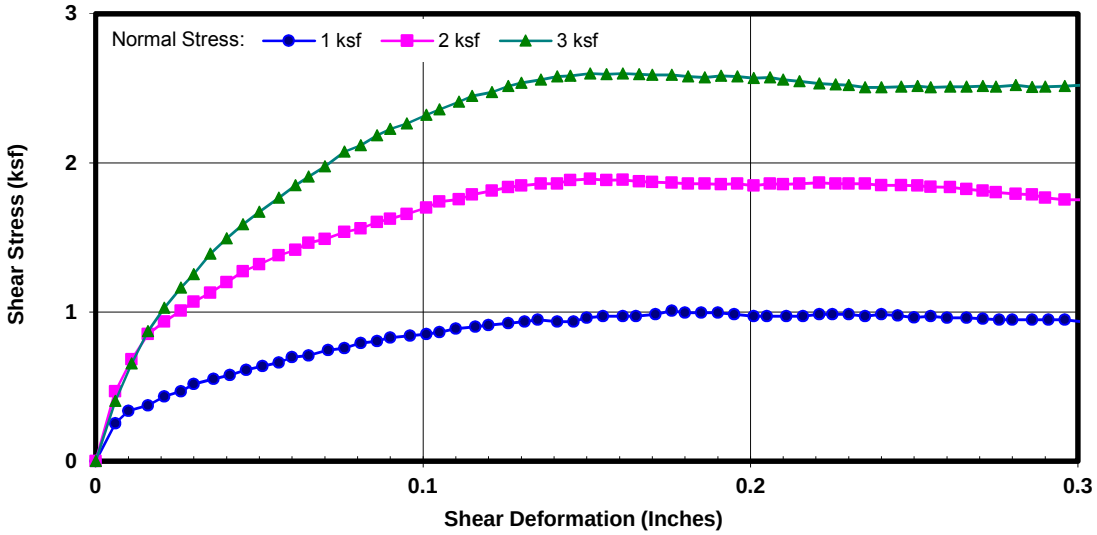
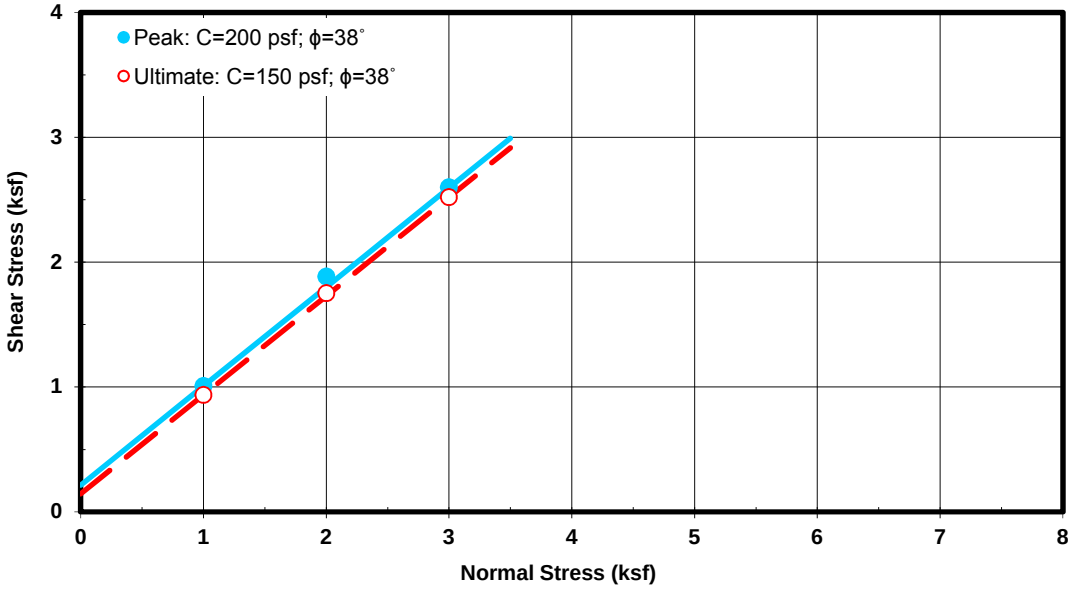
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name:	Jackson Street Apartments (JSA)		**Tested By:**	LS	**Date:** 07/14/17
Project No.:	17064A		**Computed By:**	JP	**Date:** 07/19/17
Boring No.:	B-1		**Checked by:**	AP	**Date:** 07/19/17
Sample No.:	2b	**Depth (ft):** 8.5			
Sample Type:	Mod. Cal.				
Soil Description:	Sand w/silt & gravel				
Test Condition:	Inundated	**Shear Type:** Regular			

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
107.7	105.9	1.7	19.8	8	90	1	1.008	0.936
						2	1.884	1.752
						3	2.599	2.520





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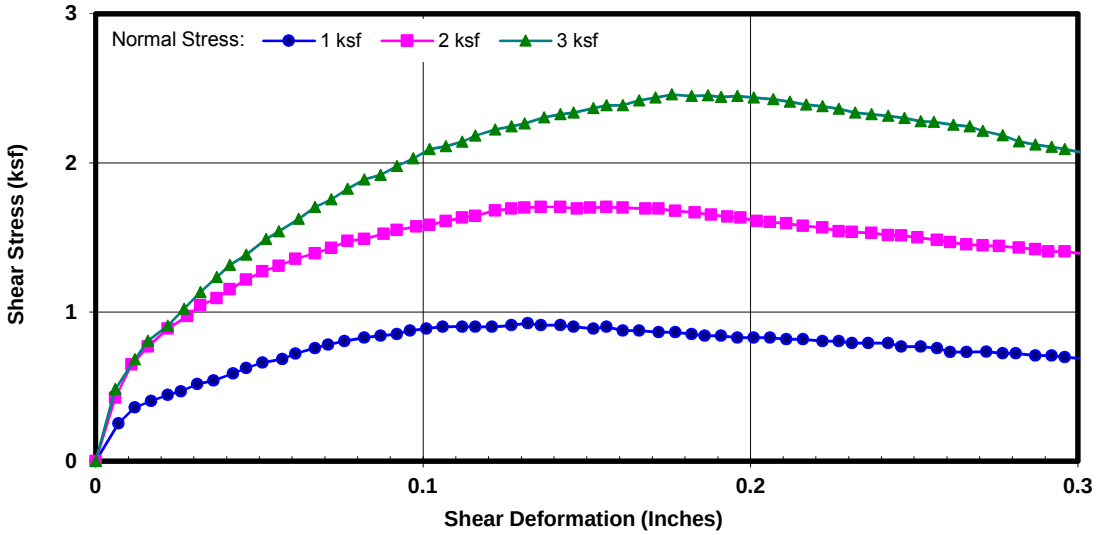
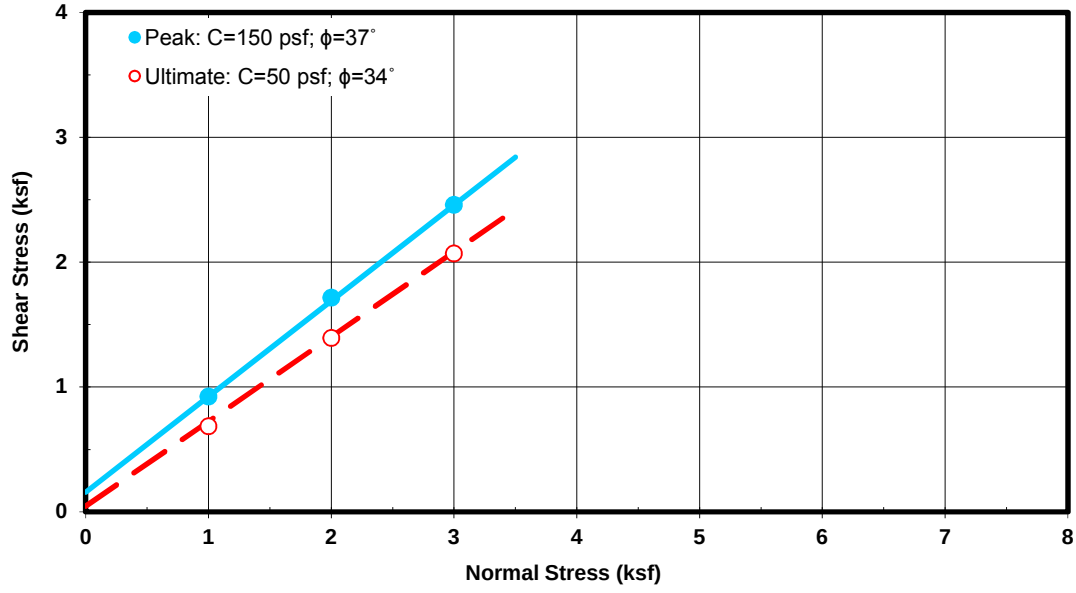
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name:	Jackson Street Apartments (JSA)		**Tested By:**	LS	**Date:** 07/14/17
Project No.:	17064A		**Computed By:**	JP	**Date:** 07/19/17
Boring No.:	B-2		**Checked by:**	AP	**Date:** 07/19/17
Sample No.:	3b	**Depth (ft):** 11			
Sample Type:	Mod. Cal.				
Soil Description:	Silty Sand w/gravel				
Test Condition:	Inundated	**Shear Type:** Regular			

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
104.3	101.8	2.5	22.0	10	90	1	0.924	0.686
						2	1.716	1.392
						3	2.458	2.070





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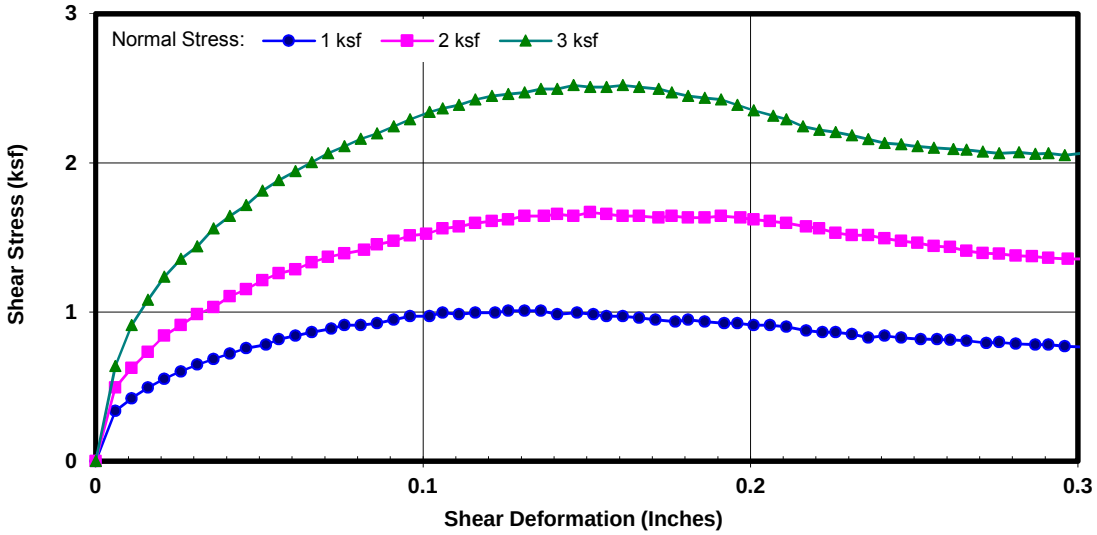
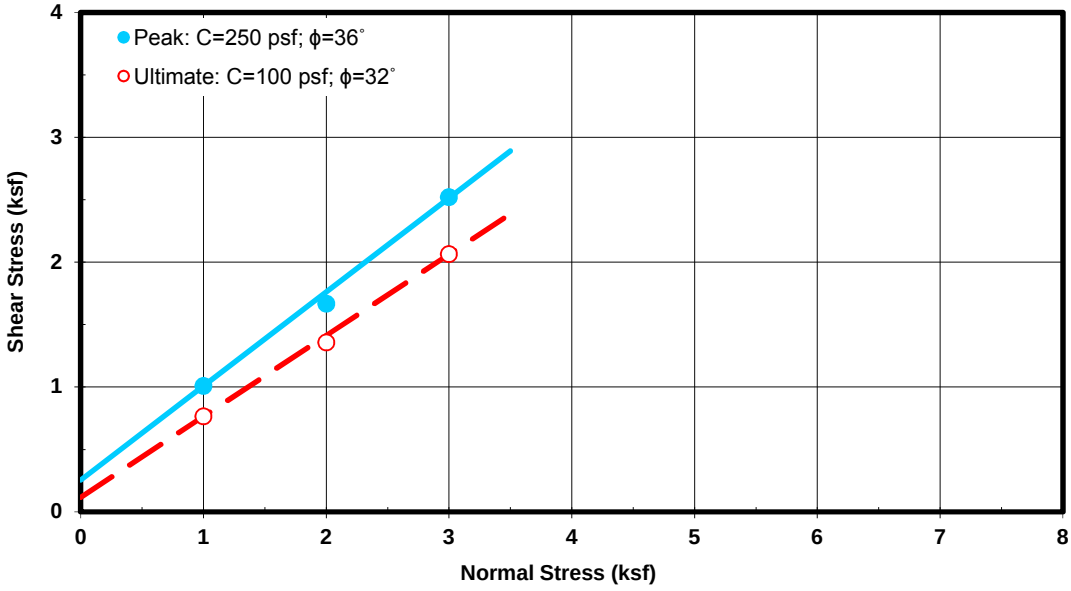
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name:	Jackson Street Apartments (JSA)		**Tested By:**	LS	**Date:** 07/14/17
Project No.:	17064A		**Computed By:**	JP	**Date:** 07/19/17
Boring No.:	B-3		**Checked by:**	AP	**Date:** 07/19/17
Sample No.:	2b	**Depth (ft):** 8.5			
Sample Type:	Mod. Cal.				
Soil Description:	Silty Sand				
Test Condition:	Inundated	**Shear Type:** Regular			

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
102.2	98.7	3.6	23.8	14	91	1	1.008	0.765
						2	1.668	1.356
						3	2.520	2.064





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COMPACTION TEST

Client:	GeoPentech			AP Number:	17-0725
Project Name:	Jackson Street Apartments (JSA)	Tested By:	AM	Date:	07/17/17
Project No. :	17064A	Calculated By:	JP	Date:	07/19/17
Boring No.:	B-2	Checked By:	AP	Date:	07/19/17
Sample No.:	Bulk-1	Depth(ft.):	0-5		
Visual Sample Description:	Sand w/silt				

Compaction Method	X	ASTM D1557	
		ASTM D698	
Preparation Method		Moist	
	X	Dry	

METHOD	A
MOLD VOLUME (CU.FT)	0.0333

Wt. Comp. Soil + Mold (gm.)	3794	3892	3948	3894		
Wt. of Mold (gm.)	1861	1861	1861	1861		
Net Wt. of Soil (gm.)	1933	2031	2087	2033		
Container No.						
Wt. of Container (gm.)	143.62	147.06	143.21	143.39		
Wet Wt. of Soil + Cont. (gm.)	324.71	344.08	328.62	324.00		
Dry Wt. of Soil + Cont. (gm.)	315.61	330.42	312.61	305.45		
Moisture Content (%)	5.29	7.45	9.45	11.45		
Wet Density (pcf)	127.84	134.33	138.03	134.42		
Dry Density (pcf)	121.42	125.01	126.11	120.62		

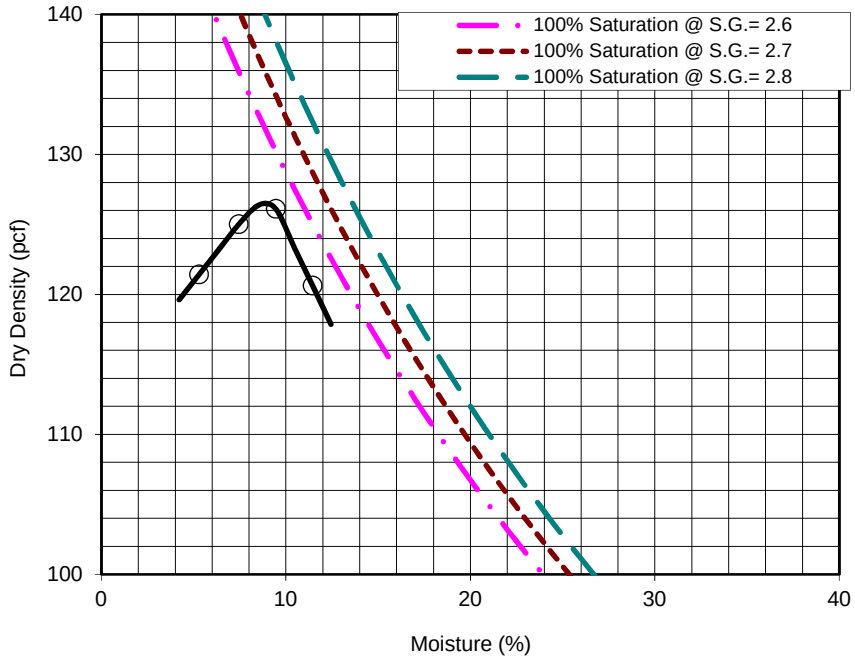
Maximum Dry Density (pcf)	**126.4**	Optimum Moisture Content (%)	**8.8**
Maximum Dry Density w/ Rock Correction (pcf)	**N/A**	Optimum Moisture Content w/ Rock Correction (%)	**N/A**

PROCEDURE USED

X *METHOD A: Percent of Oversize:* *4.0%*
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)

☐ *METHOD B: Percent of Oversize:* *N/A*
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)

☐ *METHOD C: Percent of Oversize:* *N/A*
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)



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R-VALUE TEST DATA

ASTM D2844

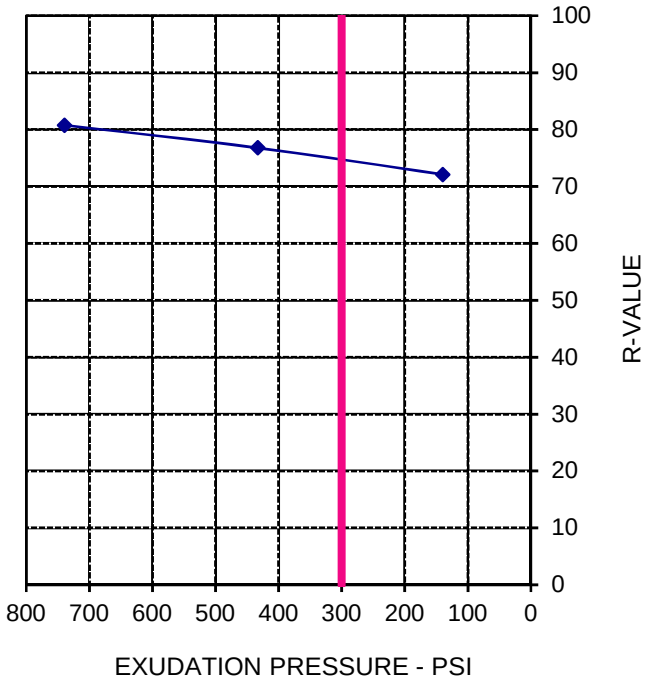
Project Name:	Jackson Street Apartments (JSA)	Tested By:	ST	Date:	07/13/17
Project Number:	17064A	Computed By:	KM	Date:	07/15/17
Boring No.:	B-3	Checked By:	AP	Date:	07/19/17
Sample Type:	Bulk-1	Depth (ft.):	0-5		
Location:	N/A				
Soil Description:	Sand w/silt				

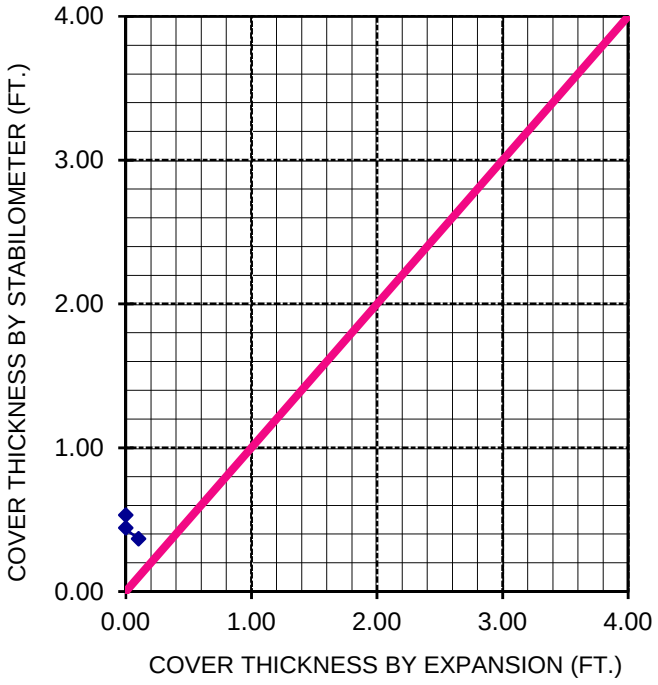
Mold Number	A	C	B	
Water Added, g	30	38	47	
Compact Moisture(%)	9.0	9.7	10.6	
Compaction Gage Pressure, psi	190	190	190	
Exudation Pressure, psi	739	433	140	
Sample Height, Inches	2.5	2.5	2.5	
Gross Weight Mold, g	3043	3047	3057	
Tare Weight Mold, g	1968	1965	1967	
Net Sample Weight, g	1075	1082	1090	
Expansion, inchesx10^{-4}	3	0	0	
Stability 2,000 (160 psi)	11/19	12/21	13/25	
Turns Displacement	4.42	5.00	5.22	
R-Value Uncorrected	81	77	72	
R-Value Corrected	81	77	72	
Dry Density, pcf	119.6	119.6	119.5	
Traffic Index	8.0	8.0	8.0	
G.E. by Stability	0.37	0.44	0.53	
G.E. by Expansion	0.10	0.00	0.00	

R-VALUE		
	By Exudation:	75
	By Expansion:	*N/A
	At Equilibrium: (by Exudation)	75

Remarks

Gf = 1.34, and 0.6 % Retained on the ¾"
*Not Applicable





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CORROSION TEST RESULTS

Client Name: GeoPentech
Project Name: Jackson Street Apartments (JSA)
Project No.: 17064A

AP Job No.: 17-0725
Date: 07/14/17

Boring No.	Sample No.	Depth (feet)	Soil Type	Minimum Resistivity (ohm-cm)	pH	Sulfate Content (ppm)	Chloride Content (ppm)
B-1	Bulk-1	0-5	SM	919	7.9	1089	114

NOTES: Resistivity Test and pH: California Test Method 643
Sulfate Content : California Test Method 417
Chloride Content : California Test Method 422
ND = Not Detectable
NA = Not Sufficient Sample
NR = Not Requested